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A JOINT PUBLICATION OF THE SOUTHERN ECONOMIC ASSOCIATION AND THE UNIVERSITY OF NORTH CAROLINA

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The SOUTHERN ECONOMIC JOURNAL

VOLUME XXV JULY 1958 NUMBER 1

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TWENTY-FIFTH ANNIVERSARY

1933–1958

In November, 1952, at its annual meeting in Jacksonville, the Southern Economic Association celebrated its Silver Anniversary. With this issue it officially becomes the turn of the *Southern Economic Journal* similarly to be congratulated. We are proud indeed to have this opportunity to say a few words commemorating this important milestone.

There is no need here to recall in any detail the triumph of the *Journal* in the bitter early struggle for its very existence. It is enough simply to salute the courage and imagination of the men who launched this ambitious enterprise in the middle of the Great Depression—and to take note of the fact that whereas in May, 1935, the *Journal* contained only the program of the Association's eighth annual meeting and consequently was of interest to but a handful of economists in the Southeast, in 1957 it had more than 1300 subscribers in 46 of our 48 states and in 37 foreign countries.

It is indicative of the spirit in which the *Journal* was founded that its launching was not accompanied by a broad statement of either purposes or principles. The men who defied economic disaster by creating a scholarly journal in the midst of unprecedented economic crisis were too preoccupied with keeping their offspring alive to explain to uninterested outsiders what it might accomplish in the event it did live. And besides, they were wise enough to understand that, after all, an institution will be what it is—and not what its founders solemnly prepare the world to expect.

It was, in fact, not until 1936 that the *Journal's* purposes were explicitly formulated. This was done in the form of two statements of policy published in the January issue of that year—one prepared jointly by the president of the Association and the president of the University of North Carolina, the other expressing the views of the *Journal's* Board of Editors. Stressed in these statements was the hope that the *Journal* would "stimulate thinking and writing by social scientists generally and economists particularly," that it would "in the years to come make a significant contribution to a wider understanding of the South's difficulties," and that it would "assist Southern economists in a more telling participation in affairs in which they are necessarily engaged."

Whether the *Journal's* achievements are measured in terms of its founders' implicit confidence that it would make its mark in the world of scholarship, or the explicit promises formulated a little later, it has in a quarter of a century accomplished far more than its founders would have permitted themselves to hope or even imagine. Not only has it attained a stature unsurpassed by any social science periodical sponsored by a regional association, but it has even earned a secure place among national professional journals.

To all those who have had a part in this achievement—contributors, editors, and officers—it is our privilege as well as our pleasure to say thank you for a work outstandingly performed. And to all those who will have a part in carrying on this work, we would like to add that a task competently begun is a future brilliantly prepared.

To that future we shall all of us, with both anticipation and pride, be looking.

HOWARD R. SMITH, *President*,
Southern Economic Association

WILLIAM B. AYCOCK, *Chancellor*,
University of North Carolina

John B. McFerrin

Twenty-Fifth President of the Southern Economic Association, 1953–1954

The SOUTHERN ECONOMIC JOURNAL

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ON THE EXISTENCE AND ROLE OF MONEY IN A STATIONARY SYSTEM

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I. INTRODUCTION[1]

This brief paper seeks to examine the basis upon which the existence and use of money rests in a stationary framework. Its major innovation is to uncover a neglected cost in the circulation of goods and services—the costs of clearing accounts between economic units—and, ultimately, to ground the use of money under stationary conditions in an advantage money possesses inherently on this count over personal credit.

Our "vision" of economic processes will be Walrasian. It is assumed that there exists a large community of economic units which holds, at the start of a market-day, given stocks of factors whose services can be appropriated by firms. The latter enter markets to buy these services for one period at the equilibrium prices which emerge at the end of the market-day. The consuming units, which own the services, arrive at understandings with firms for the future delivery, at equilibrium prices, of goods produced by the firms. All markets are purely competitive and the pairings of buying and selling units are purely random market-day after market-day. An external condition imposed arbitrarily upon the economy is the constancy of the capital stock from one period to another, but markets exist in which all types of assets are traded, either as newly-produced commodities to replace depreciated goods, or as the means *individuals* have of consuming more than their current incomes or acquiring larger stocks of earning assets.

An important feature of the economy is the lapse of time between the absorption of inputs by the productive units and the emergence of outputs. The delivery of productive services, their transformation into outputs, and the delivery of these goods to consuming units, occur during a "fulfillment-week," in which the understandings arrived at in the final equilibrium of the market-day are carried out. Finally, the assets from which the hired services were obtained, as well as all new assets, are delivered to their owners at the end of the fulfillment-week.

Under these conditions, the economy faces a problem of synchronizing inputs and outputs in the only way it can: by the accumulation of inventory capital. That is, inventories of finished goods and raw materials (we shall abstract from semi-finished stocks), extant at the start of the fulfillment-week, can eliminate the need to wait until the flow of goods begins from current pro-

[1] I am grateful to my colleague, W. J. Baumol, for reading the manuscript and suggesting several improvements. Errors, however, are jealously guarded as the author's property.

duction. Therefore, under any direct or indirect type of exchange, the services of inventories will be saleable—let us say to firms initially—and the prices of these services will enter into the prices of final products. These real costs are inescapable if a society wishes to acquire the means with which to overcome the inconveniences of time. In a Walrasian system, for example, they are pooled by society, in that every unit of product produced during the week bears its proportionate share of these synchronization costs, regardless of the time of its delivery during the week. Thus, the consumer pays no more for a good delivered Tuesday than for one delivered Friday. We shall, however, assume that other types of "costs," such as inconvenience of storage, lead economic units to distribute purchases over the length of the week.

We shall define money as a stock of good with no inherent utility, acceptable in the discharge of obligations, *whose use does not involve the recording and clearing of debit and credit accounts for economic units.* This last characteristic of a true money has been little stressed in the literature, but it forms a major distinction of an impersonal means of transacting from any type of personal instrument for so doing. Throughout the paper we shall accept the hypothesis familiar to us all: barter, in the sense of an exchange of spot goods for spot goods, is so inefficient a method of transacting that its costs effectively rule it out of the realm of relevance.

Demand deposits may be seen to fall somewhere between money and personal credit instruments, but since they require clearing between units we shall rule them to be credit instruments. Although we shall treat them as a sort of riskless bill purchased by units at par, and although we shall assume that they circulate at no discount, we shall consider the demand depositor as receiving earnings in the form of clearing services to a full or partial extent of their costs.

Given these conditions, then, we ask: under what circumstances will there arise a stock of money, a market for money services, and a market for the asset, money, in this circular flow? What conditions must be fulfilled to assure the continuance of this stock and these markets?

II. THE CASE OF PERFECT KNOWLEDGE

We shall suppose that every productive and consuming unit in the economy will engage in "understandings" only to the extent that its stock of wealth plus the willing loans of others allow, and that it will honor all "undertakings" as to quantity and time of delivery. This is true, we shall assume, because the state of knowledge in all markets at all times is such that each unit foresees that any such inconsistency in its overall weekly plan would be apparent immediately to every other unit in the economy, it would be deprived of access to markets for the week, and severe penalties of other types would follow. The risk, therefore, that any individual will default in any respect is nil.[2]

[2] See S. P. Chambers, "Fluctuations in Capital and the Demand for Money," *Review of Economic Studies*, II (1934), p. 39, and J. C. Gilbert, "The Demand for Money: The Development of an Economic Concept," *Journal of Political Economy*, LXI (1953), pp. 150–51. This seems to be the degree of perfection of knowledge implied by Professor F. H. Knight when he discusses the non-existence of money in a circular flow. See *Risk, Uncertainty, and*

Under such conditions, it may be argued that the market-day becomes superfluous, since, if foresight is sufficiently acute to discern the preceding, it should be true that equilibrium prices and quantities are immediately apparent to all in the economy.[2] Nevertheless, "understandings" between individual units will be required to assure the coordination of deliveries of inputs and outputs, if one refuses, as we shall, to admit the possibility of foreseeing the purely stochastic variation in the economy. In the absence of these undertakings between units, all economic units will tend to move together immediately to correct imbalances, since the cognizance of such defects would be instant and action immediate. We should be in the situation, to use Schumpeter's analogy, of inhabiting a frictionless world in which *all* heat moves immediately to correct the slightest departure from an even distribution, and thereby renders the world uninhabitable at the first lapse from the ideal state. Of course, we could assume a pluperfect foresight in which all units foresee that all other units will move to create further disequilibrium, and, therefore, no unit will move. However, there is no end to this ponderous gavotte, and we shall not begin it.[4]

But despite the need for undertakings so that co-ordination of units can occur, they are not necessary to insure against the default of these units. We may look upon this economy as a series of open stockpiles upon which units place their supplies at agreed-upon intervals and from which they take a socially-condoned value of desired services and goods. No need for any medium of exchange will arise: there is no use for money or open-book credit, checks, bills of exchange, receipts, etc.[5]

Profit, London School Reprint, 1933, p. xxii. This would tend to rule out the difficulty he noted in the original work, however: ". . . Attention may be directed to another tendency fatal to free competition under theoretical conditions. This is the matter of the inflation of credit. With all forms of friction eliminated there would seem to be hardly a limit to the substitution of credit for any sort of commodity as a medium of exchange and a stable value-standard would apparently be impossible to establish." (1921 edition, pp. 193–94n.)

[3] See O. Morgenstern, "Perfect Foresight and Economic Equilibrium," trans. from *Zeitschrift für Nationalökonomie*, VI (1935), mimeographed, p. 17. This paper considers the game-theoretic aspects of the assumption of perfect foresight and demonstrates the impossibility of its existence.

[4] The step is a familiar one, made famous by Sherlock Holmes and Professor Moriarty, except that in the present case the final bow by the former to the latter is not a logical consequence of the choreography. *Ibid.*

[5] The literature reveals that others have discussed the non-existence of money in a "perfect foresight" context which was not "perfect" enough to rule out other media of exchange. Marget, for example, argues that no cash balances would exist, but that units would have to convert all goods into some acceptable commodity before obtaining the goods they desire. He suggested that units might go to a "public treasury" to obtain a "certificate" to spend immediately, so that "money" would not be absent. Quite apart from the fact that this is not "money" in our sense (since it is not a stock of good), no such need would arise under the conditions we hypothesize. See A. Marget, "The Monetary Aspects of the Walrasian Theory," *Journal of Political Economy*, XLIII (1935), p. 159.

Similarly, Rosenstein-Rodan puts much stress on the absence of money rather than any transactions medium, making his "certain foresight" ambiguous: ". . . it is inconsistent to assume at the same time a state of general certain foresight and the existence of money: they are mutually incompatible. Money (as cash balance) exists only and insofar as general foresight is not certain, it is a function of the individual's feeling of uncertainty, a means

A medium of exchange (of whatever type) arises only when there exists a need to "identify" transactions—to keep track in some way, or to make a note of, economic units deposits upon and withdrawals from society's stores. Under the state of perfection of knowledge *here* assumed, no "personal" or "impersonal" type of instrument (distinguished by the existence or non-existence of an economic unit's pledge) will arise for "identifying" transactions.

III. THE CASE OF IMPERFECT KNOWLEDGE

Let us now move to an economy in which potential default by economic units is not ruled out by perfect foresight. Suppose it to be possible in the conditions of "open stockpiles" for units to withdraw goods without ever replacing them. Under these circumstances, explicit notice must be taken of transactions: withdrawal must be accompanied by a token which has the function either of (1) explicitly identifying the person who obtained the goods, or (2) noting the non-necessity of identifying the unit by assuring the deliverer of the goods that the receiving unit has a valid claim to them.[6]

In this case, however, it is assumed that personal credit instruments arise to deny the possibility of default, but that *once the identification of units has been made, default once more becomes nil.* In such circumstances, the credit instruments would be needed in order to deter default, but no clearing between units at the end of the period would be necessary. If it be assumed that the costs of such credit instruments—let us say simple receipts signed by agents of the economic units receiving goods—are negligible, once more we find that no additional burden to the real costs of synchronization is borne by society. These credit instruments would be kept by the forces of competition at face value, and any attempt to exchange via a stock of impersonal instruments could not succeed if a *sine qua non* of its continued existence was a positive price for the services of these instruments.

This type of credit instrument has an important kinship with money as defined in this paper. Although it is literally a personal credit instrument, the fact that it is not cleared makes it impersonal in a *de facto* sense. It is one of the important features of money, as will be apparent later, that it serves as a token of transactions that requires no clearing between individuals. It would not be farfetched, therefore, if we stepped outside the rigorous definition of money and looked upon this type of economy as one in which the price of the services of "money," and therefore the price of "money" itself, is zero.

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of melting it: a good satisfying the want for certainty. Since certain foresight is assumed in static equilibrium, money and static equilibrium are incompatible." See "The Coordination of the General Theories of Money and Price," *Economica*, NS, III (1936), pp. 271–72.

[6] Pigou asserts that in a one-good production economy no need for money arises, since all factors can be paid in the good. With imperfect foresight assumed, this solution neglects completely the need to "identify" deliverers of services and receivers of the good when such deliveries are not perfectly synchronized. See A. C. Pigou, *The Economics of Stationary States*, London, 1935, p. 70. Pigou seems to combine money and credit instruments in his considerations, and therefore abstracts from the problems that concern us. See, for example, his conclusions about money on pp. 74–75, which are phrased in terms of barter or no barter, not money vs. credit instruments.

IV. THE CASE OF IMPERFECT KNOWLEDGE AND CLEARING

But the mere existence of uncleared personal credit instruments could not for long guarantee the non-existence of default under conditions of imperfect foresight. Sooner or later, individual units would take advantage of this lack of clearing to draw more from the stockpile than they deserved, and a need for clearing these instruments would arise.[7] We may suppose that all transactions are conducted by the signing of receipts, and assume further that a prior cost-minimization decision by society has led to a central clearing agency where individual units' accounts are cleared at the end of each fulfillment-week. As sume, finally, to keep the new institution Walrasian, that it is forced to price at average cost for its clearing function in an as yet unspecified manner. At last, then, we have arrived at conditions in a circular flow in which the services of a "transactions identification" instrument become a real charge against the economy—a real cost necessitated by the need to obviate the possibility of default by clearing credit instruments.

As soon as the need for clearing comes into being, and its cost becomes greater than zero, there is need to consider the possibility of substitutes as methods of "identifying" transactions. Specifically, an *impersonal* credit instrument whose mere possession is sufficient evidence of the validity of a claim upon society's goods can (1) eliminate the cost of clearing while it (2) identifies transactions. If we assume that it provides these services costlessly, then holders of a given stock of it may sell its services period after period at prices that just entice the marginal economic unit to transact with it rather than use the credit mechanism.[8] The upper limit to the price of the service rendered by money must be the cost of transacting a unit of *numéraire's* business with the cheapest personal credit instrument requiring clearing.

It must not be forgotten that there was *no* default on the credit instrument before we introduced money. *Actual* default is zero and is recognized to be such by every unit in the economy as long as regular clearing is carried on. Thus, in our economy, the costs of actual default do not enter into the price of credit instruments, although, of course, the basic reason for their existence (as well as that of money) and for their being cleared is to prevent *potential* default. The distinction is vital in understanding the reason for the existence of money, for the individual, in deciding to transact by purchasing the services of money in the market or availing himself of the use of his personal credit pledge, is absolutely certain that payment in both will be accepted, although a discount will rule on the latter.

[7] This need may not be continuous. If penalties for default are made severe enough and the probability of being caught high enough, randomized clearing-or-no-clearing decisions at the end of each period may be sufficient, but costs may not be reduced greatly under those of continuous clearing. We shall assume that clearing is necessary period by period in this paper.

[8] Hicks has indicated that no monopoly bank could have a free hand in the pricing of its services, since substitutes as media of exchange would arise to limit its pricing power. See "Gleichgewicht und Konjunktur," *Zeitschrift für Nationalökonomie*, LV (1933), p. 448n.

Although it is an awkward approach that leads its user into difficulties, let us follow Hicks in assuming the existence of money before we establish that it will arise in a personal credit-instrument economy. Assume that money is borrowed by the delivery of personal credit instruments (bills) which are riskless in the credit sense and on which the interest rate cannot change since they are redeemable at the end of the fulfillment-week. Then,

> If bills stand at a discount, and consequently earn interest, is there anything to stop any individual from investing all his surplus funds in bills, and holding them during the week in that form? If there is nothing to stop him, then money has no superiority over bills, and therefore cannot stand at a premium to bills. The rate of interest must be nil.[9]

But, he continues,

> . . . If people receive payment for the things they sell in the form of money, to convert this money into bills requires a separate transaction, and the trouble of making that transaction may offset the gain in interest. It is only if this obstacle were removed, if safe bills could be acquired without any trouble at all, that people would become willing to convert all their money into bills, so long as any interest whatsoever was offered. Under the conditions of our model, it must be the trouble of making transactions which explains the short-rate of interest.[10]

But while this explanation can be used to show why money can continue to exist, once born, it cannot answer the question of why it came into existence.[11] This can be seen more clearly if, unlike Hicks, we start with an economy where only a credit instrument of a personal type is being used and ask if money will come into being. The cost of converting money into bills cannot now be used to explain the interest rate, for the "bills" are being used as circulating media already without conversion to money. Hicks comes to this point and says:

> If this were to happen generally, there would be no cost of investment, and, therefore, so it would appear, no reason for bills to fall to a discount . . . If default risk is so generally ruled out, that all traders reckon and are known to reckon, a particular bill as perfectly safe, then there is no reason why that bill should stand at a discount, for the obstacle of cost of investment can be circumvented . . .[12]

[9] *Value and Capital*, Second Edition, Oxford, 1946, p. 164

[10] *Ibid.*, pp. 164–65.

[11] See F. Modigliani, "Liquidity Preference and the Theory of Interest and Money," *Econometrica*, 12, pp. 82–83, for the first discussion of this point. But he substitutes for Hicks' reasoning an unsatisfying theory of interest: ". . . for certain categories of people (entrepreneurs as well as spendthrifts) it is worthwhile to pay a premium to obtain spot cash against a promise to pay cash in the future" (p. 83). Here, too, the reason why credit instruments cannot be used and money dispensed with is begged. Later, in his attempt to show that the disappearance of money in a stationary state, and the substitution of existing securities for money, would not lead to a zero interest rate, Modigliani limits his analysis to bonds and stocks. But if the "securities" used were the "receipts" we have been dealing with (because, for example, securities of the bond-type do not exist beyond the fulfillment week in a Walrasian system), no need to use bonds and stocks would arise, and the interest rate would decline to zero. Modigliani comes to the conclusion that this is true in the case of *indefinite* credit expansion, but does not connect it with the stationary state.

[12] *Ibid.*, p. 165.

Thus, the existence of money, and with it, the interest rate, cannot be explained by the costs of converting personal credit instruments to impersonal ones. By the logic of Hicks' own arguments, in the absence of default risk, money cannot exist in these circumstances. But he never comes to grips with the question of why credit does not replace money. He admits the possibility, but shrugs it off by refusing to accept the feasability of its being generally acceptable:

> But this general acceptability is something different from the mere absence of default risk, which we assumed previously. A class of bills may be regarded as perfectly safe by those who actually take them up, and yet these persons may be different from those to whom the borrower has to make these payments. These latter would not accept his bills, so he has to pay *cash*; the former are perfectly willing to lend, but require interest to compensate for their cost of investment.[13]

Thus, when the question is finally posed by Hicks' analysis—when, under conditions of a regime of personal credit instruments which are riskless methods of identifying transactions, will money come into existence?—Hicks backs away from answering it. As we shall see in section V, his investment impediments are a separate condition for the existence of money, but he has omitted a prior one.

That condition we have found in the need to clear personal credit instruments which circulate to prevent potential default (when actual default is zero). But, of course, our singling out of this expense because of our belief that it would be major should not blind us to the disadvantages inherent in such an instrument as money: the need to transport it physically, risk of loss or theft, and so forth. Only if the costs of using an impersonal instrument which obviates the need for clearing are cheaper than those of using a personal instrument can money come into existence: but this cost advantage may be complete, in which case money would completely replace credit instruments, or it may be only partial, in which case credit instruments may be used along with money.

But what of the twilight case: bank deposits? Why should economic units which can transact with money or pay the costs of clearing their receipts purchase *stocks* of personal-impersonal credit instruments which require clearing? If the cost advantages of a non-clearing instrument were absolute, they could not exist in these circumstances. Similarly, if the cost advantages of a personal instrument requiring clearing were absolute, no such *stocks* of instruments need arise, for surely the need to clear current transactions and account for stocks as well cannot be any cheaper than merely clearing transactions. They *can come* into existence, therefore, only when neither of our pure methods has an absolute advantage, so that economic units may desire to use clearing or non-clearing at will. But will they? It would seem to the writer that our assumptions allow no middle ground: bank deposits, which possess the disadvantages of both media, would always be at a disadvantage to one or the other, whatever the nature of the transaction. Bank deposits cannot exist.[14]

[13] *Ibid.*, p. 166.

[14] Therefore, the defense that the following writers were thinking of money in terms of demand deposits rather than paper cannot excuse their neglect of the costs of clearing personal credit instruments.

Next, let us assume that the existence of a credit instrument plus clearing, and the provision of societal penalties, do not eliminate the occurence of default entirely. If the clearing agency does not assume the responsibility and charges the loss to the seller of the goods, then the *numéraire* value of the credit instrument will be reduced further by the percentage charge that will just cover the individuals' defaults. If the clearing house sets up an insurance fund, the risks must enter into the costs of clearing in order to keep profits zero. Therefore, the existence of *actual* default among the units of an economy does not introduce novel elements into our analysis, for the roots of the latter continue to lie in the costs of successful elimination of *potential* default of much greater magnitude: the former merely adds an additional burden.

V. THE CASE OF IMPERFECT LENDING FACILITIES

Given these two preconditions for the holding of money—the need to identify transactions and the existence of cost advantages in its use for this purpose—two relevant considerations arise:

1. economic units will seek to hold it, and to purchase it for holding, between the end of the fulfillment-week and the beginning of the following market-day, as they would seek to purchase and hold any other asset that yields a saleable service;

2. economic units will seek to economize their use of its services.

From the first of these springs the assurance that individuals will not, even in a stationary state in which the good money has no direct utility for economic units, seek to reduce their stocks of it to zero at the end of the market week. This is true for money as for any other stock of asset: inventories of consumption goods, for example. If no reason exists for the unit to liquidate its holdings of other stocks, no reason exists for it to seek to reduce its stock of money to zero.

The second consideration leads to an objection many economists have raised. Since money is a good whose service is required only at a set of discrete points for each economic unit in the fulfillment week, individuals will seek to lend it to

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Patinkin has failed to provide an explanation of why credit cannot drive money from his own model in *Money, Interest, and Prices*, Evanston, 1956; G. Becker and W. Baumol, in "The Classical Monetary Theory: The Outcome of the Discussion," *Economica*, NS, XIX (1952), p. 367, make the point that if no investment frictions exist money and securities will circulate at par, neglecting the costs of clearing, and Baumol repeats the assertion in "The Transactions Demand for Cash: An Inventory Theoretic Approach," *Quarterly Journal of Economics*, LXVI (1952), p. 550; Rosenstein-Rodan stresses repeatedly that it is the "store of value" function of money—the "want for certainty"—that explains the existence of money, *op. cit.*; and J. C. Gilbert in "The Demand for Money: the Development of an Economic Concept," *loc. cit.*, pp. 146–54, distinguishes the "inconveniences of time" from uncertainty as a cause of the existence of money, but does not attempt to prove that money furnishes a cheaper method of coping with these inconveniences than credit. Similarly, J. Marschak, in "The Rationale of the Demand for Money and of 'Money Illusion,' " *Metroeconomica*, II (1950), rules out barter as a means of transactions, but does not discuss credit substitutes, although his provision that only money has a perfect market in the sense of zero transactions costs contains our concept of clearing costs implicitly. See pp. 87–100.

other units between payment dates, or even to make contracts to rent durable consumption goods with cash balances between such payment dates. Imagine, first, that the distribution of the *numéraire* value of transactions to be made throughout the fulfillment-week is a uniform one at discrete points, so that, for example, $\frac{1}{10}$ of the total value of transactions occurs at each of 10 time points in the week. Between these points, demand for the services of money will be zero, so that units will seek to lend or rent goods until the next payment date. Thus, its velocity tends toward infinity, and the price level rises with it until it becomes useless as a medium of exchange.

If payment dates may occur continuously through the week, the same result will occur. Some method of preventing the use of cash balances between payment dates must be devised as a third condition for the holding of money balances, and, therefore, the continued use of money as a medium of exchange.

Two solutions have been advanced. First, the Hicks-Marget investment impediments, which assume that the costs of making extremely short-term investments outweigh their returns, can be looked upon as forcing the economic units to hold cash balances instead of securities between payment dates. Baumol has worked out a model based upon the impediments of brokerage charges in the broadest sense of the term, and Marschak has generalized the concept to one of perfect markets for goods and discusses such frictions for a pure exchange economy.[15]

A second method is that developed by Patinkin by which the payment dates for economic units are fixed in time, but the amounts of goods received and delivered, thereby leading to payments and receipts of money by economic units at any given payment time, are randomized. The hope is that such a scheme will force economic units to hold cash if the drawings for receipts and payments are made just before the payment time, insofar as economic units will be unable to foresee accurately their net requirements of cash until it is needed. But, the mere fact that contracts of all types are made only on the market day does not force units to hold cash balances. Such randomization will lead units to form some expectation of a needed cash balance, and then seek to make contracts to lend it between payment dates, obtaining control of it just before *every* payment date. Unless impediments exist to prevent this, randomization has had no effect upon the desire of units to lend cash between payment times. Seemingly, the times at which payments in excess of receipts may occur would have to be randomized .[16]

Some have objected that under the circumstances, where money is held by

[15] J. R. Hicks, "A Suggestion for Simplifying the Theory of Money," *Economica*, NS, II (1935), pp. 6–7, and *Value and Capital*, p. 165; A. Marget, "The Monetary Aspects of the Walrasian Theory," *loc. cit.*, pp. 159–61; W. J. Baumol, *op. cit.*; J. Marschak, *op. cit.*, pp. 87–100. See also D. Patinkin, "Relative Prices, Say's Law, and the Demand for Money," *Econometrica*, 16 (1948), p. 136 and, *Money, Interest, and Prices*, pp. 62–95; G. Becker and W. J. Baunol, *op. cit.*, p. 367; Rosenstein-Rodan, *loc. cit.*, pp. 269–72; F. Modgliani, *loc. cit.*, p. 51.

[16] *Money, Interest, and Prices*, pp. 86–95. I may be doing Patinkin an injustice, but I do not find evidence that the *payment times* themselves are randomized.

default, there cannot truly be a demand for cash balances. For example, Schumpeter wrote:

> If people get their 'incomes' each Saturday and spend them on consumers goods each succeeding Monday—transactions between firms being excluded—then the money will lie about in the vaults of firms from Monday to Saturday, not because there is any demand for cash holdings, but because the institutional arrangements wills it.[17]

Taking a somewhat similiar tack, Patinkin argues that in the Walrasian system the individual holds money, not because he maximizes his utility in so doing, but because the nature of the system requires him to.[18] The present writer has expressed himself as believing that the services of money have a utility to economic units in a stationary state that can be handled best outside of a marginalistic framework.[19] The performance of the necessary identification of transactions most cheaply gives money a utility, and the mere fact that it is not in continuous use—like the tractor on the farm—does nothing to lessen this.

VI. CONCLUSION

Given (1) the need to identify individual units' withdrawals and deposits of goods and services, (2) the cheaper cost of doing so with a non-clearing type of instrument than with one that must be cleared, with or without actual default occurring, and (3) some inhibition or inducement to hold it between payment dates, money will exist in a stationary economy.

Its services will sell for a price which can be no higher than the cost of the cheapest alternative method requiring clearing. Therefore, it becomes an asset in which units can invest to obtain a yield in futurity, and a market for it as an asset will exist in which it will be priced.

From the price of its services and its price as an asset can be reckoned the "rate of interest" which is, as for any other asset, the yield of a good, durable and limited in quantity, which provides a saleable service. In this case it is the ability to perform most cheaply the necessary task of identifying transactions. Since the price of its service will always be above zero in the conditions envisioned, the interest rate will be positive and less than infinite as long as future income has a utility. Since an equilibrium condition in asset markets is the equality of all net rates of return, the rate of return on real assets can never drop below that on money. Therefore, as long as money exists in a stationary flow, the interest rate and return on goods can never, *à la* Schumpeter, decline to zero.

Lastly, we have not argued the probability of the preconditions for the existence of money, but merely the necessity of their existence in order for money to come into being and remain extant.

[17] *Business Cycles*, II, New York, p. 547.

[18] *Money, Interest, and Prices*, p. 393.

[19] See "Walras, Leontief, and the Interdependence of Economic Activities," *Quarterly Journal of Economics*, LXVIII (1954), pp. 332–33, and "Comment," *Quarterly Journal of Economics*, LXIX (1955) pp. 631–36.

AN ESSAY ON CARDINAL UTILITY

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The analysis of choice in situations involving uncertainty has always occupied an important place in economic research. This is especially true of the period following the publication of J. von Neumann's and Morgenstern's monumental treatise on game theory. In this work, the writers not only developed a systematic theory of rational behavior, but also introduced a cardinal utility theory of risk preference into modern economic literature.

Subsequently there ensued an extended controversy over the relative merits of ordinal and cardinal theories of utility. Although a consensus has not yet been attained, it seems that professional opinion has reached a point of stability. Most economists now agree that an ordinal preference theory is sufficient for the prediction of riskless choices. On the other hand, many hold that in the study of choices involving risks (stochastic situations), a cardinal measure of utility is more serviceable.

Despite a sizeable literature of research and expository papers, the cardinal utility analysis of choice in risk situations is still surrounded by areas of misunderstanding. At least five such areas may be isolated.

In the first place, some economists feel that, even if valid, a cardinal measure of utility is unnecessarily arbitrary.[1] Secondly, many believe that consumers do not behave as Bernoulli (expected utility) maximizers. In the third place, even among the proponents of cardinal theory, the shape of the utility function is in question.[2] Fourthly, some economists assert that risk and non-risk situations are not comparable; that is, risk situations cannot be reduced to certainty equivalents.[3] And finally, it is charged that economic situations typically involve subjective probabilities or credibilities rather than objective probabilities. In such cases, an observer can unquestionably assign ordinal numbers to the likelihood of occurrence of an event; but decision or choice by means of cardinal utility theory requires a cardinal measure of probability. Some economists and probability theorists regard this as impossible. Accordingly, they hold that ordinal probability is more appropriate than cardinal probability for a theory of choice involving uncertainty.

The purpose of this paper is to show that these five areas are reducible to two: (1) the comparability of risk and non-risk situations, and (2) the use of cardinal probabilities to describe economic situations whose outcomes are unknown.

[1] William J. Baumol, "The Neumann-Morgenstern Utility Index—An Ordinalist View," *Journal of Political Economy*, LIX (1951), pp. 61–6.

[2] Milton Friedman and L. J. Savage, "The Utility Analysis of Choices Involving Risk," *Journal of Political Economy*, LVI (1948), pp. 270–304; and Harry Markowitz, "The Utility of Wealth," *Journal of Political Economy*, LX (1952), pp. 151–8.

[3] Nicholas Georgescu-Roegen, "Choice, Expectations, and Measurability," *Quarterly Journal of Economics*, LXVIII (1954), pp. 503–34.

Furthermore, it is suggested that the recent development of multidimensional utility theory provides a logical solution to the first of these problems. Finally, we emphasize that in a special case, the only important question remaining is one which must be answered by probability theorists, or at least by economists *qua* probability theorists.

THE AXIOMATIC FOUNDATIONS OF CARDINAL UTILITY THEORY

In order to make our arguments as clear as possible, it seems desirable to begin with the axiomatic foundations of utility theory. Many writers have advanced axiom systems of various degrees of rigor, but all share one characteristic: adherence to the so-called Law of Parsimony. Although scientifically admirable, this process seems to mask certain important aspects of the theory; therefore, we suggest an alternative axiom system that is neither completely rigorous nor reduced to the minimum number of postulates.

A.1 (Ordering): Let there be n budgets of goods $X_1, X_2, \cdots, X_n$. For any two budgets X_i and X_j, the consumer can state unequivocally that he prefers X_i to X_j, X_j to X_i, or that he is indifferent between them. Furthermore, the consumer is consistent (transitive) in his ordering. Thus, if X_i is preferred or indifferent to X_j, X_j is preferred or indifferent to X_k, then X_k cannot be preferred to X_i.

A.2 (Gambling): Let there be r lottery tickets $L_\alpha(\alpha = 1, 2, \cdots, r)$ composed of probability combinations $(p_{1\alpha}, p_{2\alpha}, \cdots, p_{n\alpha})$ of the n budgets of goods. Then for any p, such that $0 \leq p \leq 1$, the individual is indifferent between the compound lottery ticket $[pL_\alpha, (1 - p)L_\beta]$ and the simple lottery ticket of compound probabilities

$$\{[pp_{1\alpha} + (1 - p)p_{1\beta}]X_1, [pp_{2\alpha} + (1 - p)p_{2\beta}]X_2, \cdots, [pp_{n\alpha} + (1 - p)p_{n\beta}]X_n\}.$$

A.3 (Comparability): Suppose that the budgets are ordered and renumbered so that $X_1[R]X_2[R] \cdots [R]X_n$, but $X_1[P]X_n$ (where $[R]$ means "preferred or indifferent to" and $[P]$ means "strictly preferred to"). Then for any budget X_i, the individual is indifferent between the certainty of X_i and some lottery ticket composed of X_1 and X_n only. Of course, in the special cases where $i = 1$ and $i = n$, the probability of obtaining X_1 and X_n in the lottery tickets must be unity. We designate this lottery ticket by $\bar{X}_i$, so that $X_i[I]\bar{X}_i$ (where $[I]$ means "is indifferent to").

A.4 (Substitutability): By A.3 and A.1, the individual is indifferent between any lottery ticket L_α and that same lottery ticket in which the truncated lottery $\bar{X}_i$ is substituted for X_i. Assuming that preference and indifference among lottery tickets are consistent, we say that

$$L_\alpha = (p_{1\alpha}X_1, p_{2\alpha}X_2, \cdots, p_{n\alpha}X_n)[I](p_{1\alpha}\bar{X}_1, p_{2\alpha}\bar{X}_2, \cdots, p_{n\alpha}\bar{X}_n).$$

By A.2, the probabilities of the latter ticket can be compounded, yielding

$$\bar{L}_\alpha = [q_\alpha X_1, (1 - q_\alpha)X_n],$$

where $0 \leq q_\alpha \leq 1$ for $\alpha = 1, 2, \cdots, r$.

A.5 (Choice): By A.4, each lottery is reducible to an indifferent lottery com-

posed of the most and least preferred budgets only. The consumer, in choosing between two lotteries L_α and L_β, or their equivalents $\bar{L}_\alpha$ and $\bar{L}_\beta$, selects that lottery in which the probability of the most preferred budget is greater. That is, L_α is preferred to, indifferent to, or less preferred than L_β according as $q_\alpha \gtreqless q_\beta$.

An example of choice will serve to explain the axioms and establish an easy method of determining preference. Suppose that there are four budgets numbered such that $X_1[R]X_2[R]X_3[R]X_4$ and $X_1[P]X_4$. Consider two lottery tickets, $L_1 = (\frac{1}{4}X_1, \frac{1}{3}X_2, \frac{1}{6}X_3, \frac{1}{4}X_4)$ and $L_2 = (\frac{1}{6}X_1, \frac{1}{2}X_2, \frac{1}{6}X_3, \frac{1}{6}X_4)$; an individual must choose between these lottery tickets. According to A.3, let $\bar{X}_i[I]\,[u_iX_1, (1 - u_i)X_4]$. Then by A.4, L_1 and L_2 can be written in their canonical forms:

$$\bar{L}_1 = [(\tfrac{1}{4}u_1 + \tfrac{1}{3}u_2 + \tfrac{1}{6}u_3 + \tfrac{1}{4}u_4)X_1, (1 - \tfrac{1}{4}u_1 - \tfrac{1}{3}u_2 - \tfrac{1}{6}u_3 - \tfrac{1}{4}u_4)X_4],$$

$$\bar{L}_2 = [(\tfrac{1}{6}u_1 + \tfrac{1}{2}u_2 + \tfrac{1}{6}u_3 + \tfrac{1}{6}u_4)X_1, (1 - \tfrac{1}{6}u_1 - \tfrac{1}{2}u_2 - \tfrac{1}{6}u_3 - \tfrac{1}{6}u_4)X_4].$$

These two tickets can be evaluated as soon as the individual assigns values to u_i, $0 \leq u_i \leq 1$, corresponding to each budget. Immediately, it is known that $u_1 = 1$ and $u_4 = 0$. The individual must determine u_2 and u_3 by reference to his own preference pattern. Suppose that he sets $u_2 = \frac{2}{3}$ and $u_3 = \frac{1}{3}$. Then substituting these values in the expressions for $\bar{L}_1$ and $\bar{L}_2$, we have $\bar{L}_1 = (19\frac{1}{36}\ X_1, 17\frac{1}{36}\ X_4)$ and $\bar{L}_2 = (20\frac{1}{36}\ X_1, 16\frac{1}{36}\ X_4)$. Consequently, by A.5, the individual prefers the lottery L_2 to the lottery L_1.

Observing the method of reduction to canonical form, we determine a criterion of choice that is readily applicable. The probability of obtaining the budget X_1 in the lottery $\bar{L}_1$ is $\sum_{i=1}^{4} p_{i1}u_i$, while the corresponding probability for lottery $\bar{L}_2$ is equal to $\sum_{i=1}^{4} p_{i2}u_i$. That is, $\sum p_{i2}u_i$ is equivalent to the q_β of A.5. Therefore, we say that the lottery L_α is preferred to, indifferent to, or less preferred than the lottery L_β according as $\sum p_{i\alpha}u_i \gtreqless \sum p_{i\beta}u_i$.

Now from the assumptions A.1–A.5, preferential comparison of all pairs of lottery tickets is possible, preference being determined according to the magnitude of the associated numbers $\sum p_iu_i$. Since (for n budgets) u_1 must equal unity and u_n zero, the values of u_i assigned by the individual are limited to real numbers lying in the unit interval and, accordingly, are uniquely defined. We say that these values are *utilities* and that in selecting the truncated lottery for which $\sum p_iu_i$ is greater, the individual behaves as an expected utility (Bernoulli) maximizer.

Finally, attention is called to the emphasis placed upon the word "assigns." In A.3 we assumed that the individual can assign u_i values; however, this does not imply that there exists a statistical or empirical method for *measuring* these u_i values. It is not our purpose to discuss this issue. Suffice it to say that if the individual *specifies* his u_i values, then analysis can be undertaken subject to certain qualifications mentioned below.

EXPECTED VALUE, HIGHER MOMENTS, AND THE SHAPE OF THE UTILITY FUNCTION

Since the writings of the Bernoulli family, there has been a controversy over the "realism" or "validity" of the assumption that individuals behave as if

they were expected utility maximizers. There is at least one important instance in which this argument reduces to a special case of the problem of comparability between risk and riskless situations. This instance occurs when all budgets are expressible in monetary units; that is, when each X_i can be assigned a unique money value. This technique has been widely used and is certainly appropriate for many economic problems. For example, Friedman and Savage employed this reduction in their papers on insurance and gambling.[4]

Furthermore, adopting this method of reduction facilitates comparison of the various budgets of goods and provides us with a convenient expression for choice alternatives. Finally, by using this convention, analysis is not restricted to "once-for-all" propositions, whereas if budgets of real goods are considered, cardinal theory is not applicable to repetitive situations, as Wold has shown.[5] Therefore, for the remainder of this paper, we consider only those cases in which each budget is uniquely expressible in units of money.

To say that a consumer behaves as an expected utility maximizer does not imply that he behaves as a maximizer of expected monetary value. The individual's preference or aversion for a relatively small measure of dispersion around the expected monetary value is revealed by his assignment of utility (u_i) values to each budget. On the other hand, the question of expected utility maximization concerns the choice between two budgets for which the sum-products $\sum p_{i\alpha}u_i$ and $\sum p_{i\beta}u_i$ are identical, but for which the probability values are different, *i.e.*, $(p_{1\alpha}, p_{2\alpha}, \cdots, p_{n\alpha}) \neq (p_{1\beta}, p_{2\beta}, \cdots, p_{n\beta})$. It is our contention that this problem is a special case of the comparability of risk and non-risk situations.

Let us discuss this by means of an illustration. Suppose that there are four budgets of goods having the following monetary values: $X_1 = \$20$, $X_2 = \$15$, $X_3 = \$10$, and $X_4 = \$5$. Now consider two lottery tickets that have the same expected monetary value ($\bar{v}_i$):

$$L_1 = (\tfrac{1}{2} X_1, \tfrac{1}{2} X_4), \bar{v}_1 = \tfrac{1}{2}(20 + 5) = 12.50,$$

$$L_2 = (\tfrac{1}{2} X_2, \tfrac{1}{2} X_3), \bar{v}_2 = \tfrac{1}{2}(15 + 10) = 12.50.$$

However, it is obvious that the dispersion around the expected monetary value is different for the two lotteries. Indeed, the variance of L_1 is 56.25, while that for the second lottery is 6.25.

An individual who behaves as a maximizer of expected monetary value is indifferent between these two lotteries. On the other hand, a Bernoulli maximizer may prefer either ticket or be indifferent between them, the choice depending upon his assignment of utility values to the various budgets. Suppose that there is an individual who completely disregards the dispersion of values, therefore behaving as if he maximized expected monetary value. Then he must assign the

[4] *Op. cit.*, and same authors, "The Expected Utility Hypothesis and the Measurability of Utility," *Journal of Political Economy*, LX (1952), pp. 463–74.

[5] H. Wold, "Ordinal Preferences or Cardinal Utilities," *Econometrica*, XX (1952), pp. 661–4.

following u_i values: $u_1 = 1$, $u_2 = \frac{2}{3}$, $u_3 = \frac{1}{3}$, $u_4 = 0$. This individual is indifferent between the two lotteries, for by the criterion:

$$\sum p_{i1}u_i = (\tfrac{1}{2})\ (1) + (\tfrac{1}{2})\ (0) = \tfrac{1}{2},$$

$$\sum p_{i2}u_i = (\tfrac{1}{2})\ (\tfrac{2}{3}) + (\tfrac{1}{2})\ (\tfrac{1}{3}) = \tfrac{1}{2}.$$

Another individual, being more sensitive to extreme values, might assign a different set of u_i values: $u_1 = 1$, $u_2 = \frac{3}{4}$, $u_3 = \frac{2}{3}$, and $u_4 = 0$. A person whose utility function conforms to this pattern prefers the lottery with less dispersion, L_2 :

$$\sum p_{i1}u_i = (\tfrac{1}{2})(1) + (\tfrac{1}{2})(0) = \tfrac{1}{2},$$

$$\sum p_{i2}u_i = (\tfrac{1}{2})(\tfrac{3}{4}) + (\tfrac{1}{2})(\tfrac{2}{3}) = \tfrac{17}{24} > \tfrac{1}{2}.$$

Finally, a consumer may prefer dispersion. In this case, he might assign utility values in the following manner: $u_1 = 1$, $u_2 = \frac{3}{4}$, $u_3 = \frac{1}{8}$, $u_4 = 0$. Consequently, this person displays a preference for L_1 :

$$\sum p_{i1}u_i = (\tfrac{1}{2})(1) + (\tfrac{1}{2})\ (0) = \tfrac{1}{2},$$

$$\sum p_{i2}u_i = (\tfrac{1}{2})(\tfrac{3}{4}) + (\tfrac{1}{2})(\tfrac{1}{8}) = \tfrac{7}{16} < \tfrac{1}{2}.$$

These examples clearly demonstrate that maximization of expected utility does not entail maximization of expected monetary value. The latter is a special case of the former that is applicable when the individual in question completely disregards the dispersion of monetary values. What, then, is the problem of Bernoulli maximization? This question may be answered by using another example.

Expected utility maximization implies that an individual is indifferent between two lotteries for which $\sum p_i u_i$ are equal. Let us consider two such lotteries: $L_1 = (\frac{1}{4}\ X_1\ ,\ \frac{1}{3}\ X_2\ ,\ \frac{1}{4}\ X_3\ ,\ \frac{1}{6}\ X_4)$ and $L_2 = (1\ X_3)$. Obviously the, expected monetary values are not the same; specifically, $\bar{v}_1 = 13.33$ and $\bar{v}_2 = 10.00$. But when the individual assigns the utility values $u_1 = 1$, $u_2 = \frac{3}{4}$, $u_3 = \frac{2}{3}$, $u_4 = 0$, the criterion yields the same magnitude in each case.

$$\sum p_{i1}u_i = (\tfrac{1}{4})(1) + (\tfrac{1}{3})(\tfrac{3}{4}) + (\tfrac{1}{4})(\tfrac{2}{3}) = \tfrac{2}{3},$$

$$\sum p_{i2}u_i = (1)(\tfrac{2}{3}) = \tfrac{2}{3}.$$

Now it is argued by some economists that in order to have a "realistic" standard of behavior, the second and possibly higher moments of the probability values should be considered. More particularly, many would contend that rational behavior implies $L_2[P]L_1$. This might be true; but the point that we wish to emphasize is that any argument about the ordering of L_1 and L_2 is essentially a controversy over the comparability axiom rather than the Bernoulli maximization principle.

The example above is in the form of a *reductio ad absurdum* since it presents the alternatives of certainty and risk. However, the argument is applicable to

more general cases. If one assumes that risk and riskless situations are comparable, *i.e.*, that $X_i[I][u_iX_1, (1 - u_i)X_n]$ for some u_i in the unit interval, then the probability distributions associated with the various lottery tickets are merged through the law of compound (independent) probability into single probabilities for X_1 and X_n. Once the reduction of lottery tickets to the canonical form represented by the truncated lottery $\bar{L}_a$ is admitted, the only rational principle of selection is the choice of that lottery with the greater probability of the more preferred budget.

This principle of choice is tantamount to maximizing expected utility, since we have shown that selection of the lottery with the greater probability of X_1 is accomplished by comparing the sum-products $\sum p_iu_i$. This comparison is possible, however, only if the lotteries are reducible to canonical form (the comparability assumption accepted). It seems of some value to put this controversy where it belongs, in the realm of the comparability axiom rather than the Bernoulli assumption, for recent developments in the field of multidimensional utility theory offer some hope for the solution of the comparability problem. This is discussed in the following section after a few words about the shape of the utility function.

How does the individual determine the u_i values and, consequently, the shape of his utility function for income or wealth? Two answers may be given: (1) he assigns the u_i values so as to express his aversion or preference for dispersion around the expected monetary value, or (2) since the magnitude of the change from one u_i value to the next is marginal utility, the individual assigns u_i values in conformity with his marginal valuation of money, *i.e.*, so as to reflect diminishing or increasing marginal utility of money. Since (1) and (2) answer the same question, they should be related. Indeed, they are alternative expressions for the same statement.

To illustrate this, refer to Figures 1a, 1b, and 1c. The utility functions from the first example of this section are plotted on these graphs. For convenience, the hypothetical data are summarized in Table 1. Figure 1a represents the individual who maximizes expected monetary value, or alternatively stated, maximizes expected utility disregarding the dispersion of monetary values. The utility function of such an individual is a straight line whose slope is equal to the *constant* marginal utility of income.[6] Over the range of income represented in Figure 1a, the individual is indifferent between certain income and either fair insurance or fair gambles.[7] However, he will refuse to pay a premium for either.

For example, suppose that this person is in a position such that he can either earn twenty dollars with probability two-thirds or earn five dollars with proba-

[6] In this formulation, utility is a function of income only, *i.e.*, $u = U(X)$. If marginal utility is constant with respect to income, then $du/dX = a$, where "a" is a constant. Integrating this differential equation, we obtain $u = aX + b$, "b" constant, which confirms that the utility function is a straight line when marginal utility is constant.

[7] Consider two lotteries, $L_1 = (1X_1)$, $L_2 = (p_{12}X_1, p_{22}X_2, \ldots, p_{n2}X_n)$, the former representing the certainty of a particular budget, while the latter is either an insurance or gambling situation. An insurance policy or a gamble is said to be "fair" if $\bar{v}_1 = \bar{v}_2$, *i.e.*, if the expected monetary values are equal.

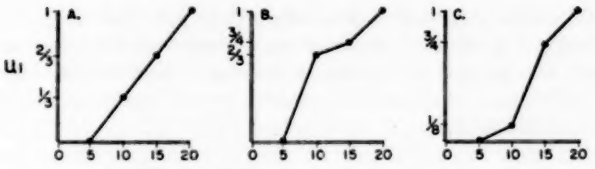

FIG. 1. Graphical Display of Hypothetical Utility Functions of Table 1

TABLE 1

HYPOTHETICAL UTILITY FUNCTIONS

u_i	a	b	c
u_1	1	1	1
u_2	2/3	3/4	3/4
u_3	1/3	2/3	1/8
u_4	0	0	0

bility one-third. He is indifferent between this prospect and the "fair" insurance paying him fifteen dollars, for $\sum p_{i1}u_i = 2/3 = \sum p_{i2}u_i$. Similarly, he is indifferent between the certain income of twelve dollars and fifty cents and a gamble offering him one-half chance of twenty dollars and one-half chance of five dollars.

This is not true of the individual whose utility function conforms to Figure 1b. Over the income range from five to fifteen dollars, the individual will accept all fair insurance policies and reject all fair gambles. Indeed, he will pay a premium for insurance.[8] On the other hand, the person represented by Figure 1c will accept all fair gambles and reject fair insurance over the same income range.

From the figures, it is obvious that the individual of 1b regards additional units of income as having progressively less marginal utility (over the five to fifteen dollar range), while 1c attests to an increasing marginal utility of money. Thus we can link together three characteristics that describe the same utility function: preference for dispersion, preference for gambling or insurance, and the change in marginal utility of money. Over the specified range of income, preference for concentrated monetary values, acceptance of fair insurance together with rejection of fair gambles, and a diminishing marginal utility of money all indicate a utility function that is concave from below. Contrariwise, preference for dispersion, fair gambling, and increasing marginal utility of money are synonyms.

Over wider ranges of income, the individual utility function may pass through one or more points of inflection, thereby reversing its concavity property. To be sure, it is on this basis that Friedman and Savage reconciled the behavior of persons who simultaneously gamble and buy insurance. Harry Markowitz[9] has also contributed to the discussion of the utility function for income or wealth.

[8] For an explanation of the arithmetic involved, see Friedman and Savage, "The Utility Analysis . . . ," *op. cit.*

[9] Markowitz, *op. cit.*

Since his important paper, it is generally recognized that the particular form ascribed to the individual utility function depends, among other things, upon (1) whether zero income or customary income is used as the origin, and (2) whether windfall gains and losses or earned gains and losses are considered in the construction of the function.

THE AREA OF MISUNDERSTANDING

In the introduction we listed five aspects of cardinal utility theory that have been subject to misunderstanding. We hope that two of these have been eliminated. Specifically, we suggest that problems concerning the Bernoulli criterion are properly attributable to the comparability assumption. Secondly, the discussion in Section II shows that it is impossible to specify the shape of the utility function *a priori*. The functional form will vary with different individuals and with the nature of the problem under investigation. Consequently, controversy over the shape of the utility function seems irrelevant.

A third charge brought against cardinal utility theory is that, even if valid, it is unnecessarily arbitrary. Or alternatively expressed, what is the justification of designating particular members (all linear transformations) of the general class of monotonic transformations of the preference function as *the* utility function for prospects involving risk? To do so implies that utility is measurable, while using the general class of monotonic transformations means that one must regard utility measures ordinally. Friedman and Savage[10] have answered the charge: "The justification is that, if the hypothesis is accepted, the former mode of speaking (*i.e.*, cardinal utility) is far more convenient than the latter. Convenience may seem a slender justification; it is in fact an extremely important one." Thus the problem areas are reduced to two: the comparability assumption and the relevance of cardinal utility theory in economic situations.

A. The Comparability Axiom

As we have seen, to obtain a cardinal ordering of utility it is necessary that risk and riskless situations be comparable. This means than at individual must be able to specify probability values such that he is indifferent between a given certain event and a lottery involving the designated probabilities. Perhaps the economist who has been most persistent in criticism of the comparability assumption is Nicholas Georgescu-Roegen.

This writer suggests that the structure of human wants is characterized by an important phenomenon which he terms the "Principle of Irreducibility of Wants."[11] This principle expresses what Georgescu-Roegen considers a fundamental aspect of the structure of wants. Specifically, each individual has a hierarchy of wants; the lesser ones can only be regarded after the higher wants have been satiated. From this he deduces that bundles of goods that do not satisfy the same span of the hierarchy are not comparable. For example, a budget that does not include water cannot be compared with one that does. He then

[10] Friedman and Savage, "The Expected Utility Hypothesis . . . ," *op. cit.*, p 471.
[11] Georgescu-Roegen, *op. cit.*, p. 515.

explains choice as follows:[12] "Choice aims at satisfying the greatest number of wants starting with the most important and going down their hierarchy. Therefore, choice is determined by the least important want that could be reached."

According to Georgescu-Roegen, this principle applies to all choices, and *a fortiori*, to choices involving risk or uncertainty. Thus even if non-empty indifference classes exist for riskless alternatives, they do not for uncertain prospects. "No matter how many distinct criteria intervene in a riskless choice, risk adds an essentially distinct one: a sure alternative and a risk proposition, being relatively heterogeneous, can in no case be indifferent."[13] Following this statement, Georgescu-Roegen provides an example illustrating the similarity between the higher moments of utility calculation and his hierarchy of wants.[14] This example, indeed, tends to fortify our statement that the "realism" of the Bernoulli criterion is essentially involved in the acceptance of the comparability axiom.

Our immediate purpose is not to argue whether risk and riskless choices are comparable, but simply to suggest an alternative formulation that reconciles Georgescu-Roegen's "Principles of Irreducibility of Wants" with cardinal utility theory. The technique is question is multidimensional utility analysis originally developed by R. M. Thrall and Melvin Hausner.[15]

The essential feature of multidimensional utility analysis is the absence of the comparability assumption. By invoking A.3, it is possible to reduce utilities to real numbers, *i.e.*, the utility space is limited to one dimension. And, to be sure, as Friedman and Savage said, this procedure is very convenient. However, there are some situations to which the comparability axiom obviously does not apply. For an extreme view, Georgescu-Roegen considers it inappropriate for any economic problem. On the other hand, Thrall[16] asserts that in a purely economic situation, the comparability axiom probably holds and, hence, ". . . for much of economics one can probably safely neglect non-Archimedean utilities."

Ignoring the arguments concerning applicability, we wish to provide an example of a multidimensional utility problem that has some intuitive flavor. Consider an entrepreneur who has a two-level hierarchy of objectives (wants): (1) remaining solvent and (2) making profit. Suppose that the former is paramount, so that two plans of action are not comparable if one involves the slightest possibility of bankruptcy while the other does not. It is clear that the assumption A.3 does not hold in this situation; however, a two dimensional utility is appropriate if we let the *dominant component* describe the probability of bankruptcy and the *subordinate component* refer to the probability of various amounts of profit.

That is to say, instead of assigning simple u_i values to each event, we assign an *ordered pair* of numbers (w_i, u_i) to each. The first (dominant) component

[12] *Ibid.*, p. 518.
[13] *Ibid.*, p. 525.
[14] *Ibid.*, p. 526.
[15] R. M. Thrall, "Applications of Multidimensional Utility Theory," and Melvin Hausner, "Multidimensional Utilities," both in R. M. Thrall, Clyde Coombs, and R. Davis, eds., *Decision Processes* (New York: Wiley, 1954), pp. 181–6 and pp. 167–80 respectively.
[16] Thrall, *op. cit.*, p. 185.

refers to bankruptcy, the second (subordinate) to profit. To make the illustration more concrete, let prospects involving bankruptcy have initial component w_i, $0 \leq w_i \leq 1$, the magnitude of w_i being inversely related to the probability of bankruptcy. Specifically, "zero" corresponds to certain bankruptcy and "one" to certain profit. The second component consists of the u_i values as previously assigned to monetary alternatives.

We can now define a basis for the appraisal of various business prospects. Let A be the event "bankruptcy," so that we assign the order pair (0, 0) to it (remembering that bankruptcy involves zero profit). Designate B the event "certain profit equal to five dollars," so that we assign the order pair (1, 0). Finally, let C be "certain profit of twenty dollars," so the associated utility co-ordinates are (1, 1). It is, of course, clear that we have used the u_i (second component) values from Table 1. These co-ordinates can be plotted on a regular Cartesian graph as shown in Figure 2.

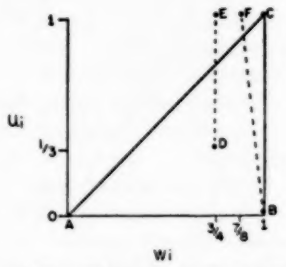

FIG. 2. Two-Dimensional Utility Space

The basis of comparison is given by the triangle ABC. Now consider alternatives D, E, and F defined as follows: D is the event "bankruptcy with probability $\frac{1}{4}$, ten dollars with probability $\frac{3}{4}$"; E involves the same probability of bankruptcy and twenty dollars with probability $\frac{3}{4}$; finally, F is the event "bankruptcy with probability $\frac{1}{8}$, twenty dollars with probability $\frac{7}{8}$." From Table 1, column a, assign the following ordered pairs to these prospects: $D = (\frac{3}{4}, \frac{1}{3})$, $E = (\frac{3}{4}, 1)$, and $F = (\frac{7}{8}, 1)$.

Now the basis of choice between any two events is clear: one first compares the dominant components, selecting that alternative with the larger value. If these two are equal, the second components are compared. For example, $F[P]E$ since the dominant component is greater in alternative F; $E[P]D$ since the dominant components are equal, but the subordinate component in E is greater than the corresponding component of D. By this device, we have reduced to two-dimensional comparability events that are, in the view of the entrepreneur in question, not amenable to one-dimensional comparison.

The same analytical technique may be extended to any desirable number of dimensions. Furthermore, as Thrall has shown,[17] multidimensional utility analysis can be used in problems of game theory and linear programming, only requiring

[17] *Ibid.*, pp. 185-6.

iteration of solutions of one-dimensional utility problems for the hierarchy of objectives. But disregarding the mechanics of multidimensional utility analysis, let us reemphasize the important point of this discussion: if one rejects the cardinal utility analysis of choices involving risk because of the Bernoulli criterion or the comparability assumption, then the theory of multidimensional utility spaces provides an alternative formulation of the cardinal hypothesis that avoids these objections. On the other hand, we do not wish to suggest that multidimensional analysis provides an attractive instrument for interpreting actual behavior.

B. The Nature of Probability and the Relevance of the Cardinal Hypothesis

In his important contribution, Georgescu-Roegen[18] concluded that the "... cardinalist doctrine, though analytically true, is synthetically false." This indictment is too broad; indeed, it seems that any conclusion must be expressed in terms of the *relevance* of cardinal utility theory for the prediction of choice in situations involving outcomes that are not known with certainty. An examination of relevance, in turn, leads one into the study of the foundations of probability theory, an area which is, itself, controversial. In what follows, we shall attempt to present two important views of probability theory and to show that the cardinal hypothesis is irrelevant or relevant according as one accepts the first or the second view discussed.

Most observers agree that it is impossible to ascribe frequency-determined probabilities to economic events that are not known with certainty. Such events, even if repeated, are not in sufficiently close agreement with the mathematical concept of independently repeated random events to permit the derivation of probabilities from observations. On the contrary, economic situations are amenable only to a personalistic interpretation of probability, sometimes called "credibility." In the application of probability theory to economics, the controversy arises, not in regard to the "objective" or "subjective" character of the probabilities involved, but over the "cardinal" or "ordinal" nature of credibilities.

Certain writers contend that credibilities cannot be measured, if by measurement we mean the establishment of an one-to-one (or a many-to-one) ordered correspondence with the real number system. Rather, credibilities involve degrees of rational belief, and it is charged that there are not enough real numbers to go around (*i.e.*, the cardinality of degrees of rational belief is greater than the cardinality of the reals). Or as Georgescu-Roegen has put it,[19] credibility is related to a state of mind and "States of mind are almost without exception correlated with more than one physical measure, ... [and are] not necessarily a one-parameter ordering."

J. M. Keynes[20] has expressed the same thought somewhat differently:

> Some probabilities are not comparable in respect of more or less, because there exist more than one path, so to speak, between proof and disproof, between certainty and im-

[18] Georgescu-Roegen, *op. cit.*, p. 531.

[19] *Ibid.*, p. 528.

[20] J. M. Keynes, *A Treatise on Probability* (London, 1929), p. 35.

possibility; and neither of two probabilities, which lie on independent paths, bears to the other and to certainty the relation 'between' which is necessary for quantitative comparison.

Several writers have discussed credibility in detail and have advanced canons or laws that embody useful rules for appraising the degree of rational belief. However, the essential feature for our present interest is that a large number of probability theorists believe that "degrees of rational belief" rather than "real numbers" must be associated with economic events not known with certainty.

On the other hand, certain probability theorists deny this statement and hold that real numbers can be assigned to degrees of rational belief. Generally, the members of this group feel that "personalistic" probabilities apply to all phenomena; or, as di Finetti says,[21] ". . . the assignment of *a priori* probability, or something equivalent, is essential in all cases." According to the writers of this persuasion, the terms "probability" and "utility" are exactly parallel concepts: each is defined by the process used to assign numbers to it and neither is regarded as an entity existing separately from the theory.

B. O. Koopman[22] and L. J. Savage[23] were among the first to devise methods for assignment of numbers to personalistic probabilities; however, the psychologist, Clyde Coombs,[24] has perhaps done the most fundamental work in the construction of experiments designed to measure empirically degrees of rational belief. Coombs has also suggested a distinction in terminology between the cardinal utility hypothesis based on measured personalistic probabilities and the same hypothesis based upon objective probabilities (*i.e.*, probabilities determined by relative frequency). He calls the former "expected utility," the latter "utility of objective expected value."[25]

This is an important distinction, for it serves to delineate the area of theory still subject to controversy. The cardinal hypothesis based upon objective expected value, and especially as supplemented by multidimensional utility analysis, seems perfectly defensible from a theoretical standpoint. However, it also seems perfectly inapplicable to the theory of choice or decision, since the necessary frequency-determined probabilities cannot be ascertained.

Consequently, our discussion must be limited to "expected" utility in the Coombs sense. This, in turn, means that the economic theory of cardinal utility becomes a problem in probability theory. If one is not willing to ascribe real

[21] Bruno di Finetti, "Recent Suggestions for the Reconciliation of Theories of Probability," *Second Berkeley Symposium on Mathematical Statistics and Probability* (Berkeley: University of California Press, 1951), p. 218.

[22] B. O. Koopman, "The Axioms and Algebra of Intuitive Probability," *Annals of Mathematics*, XLII (1940), pp. 269–92; and "The Bases of Probability," *Bulletin of the American Mathematical Society*, XLVI (1940), pp. 763–74.

[23] L. J. Savage, *The Foundations of Statistics* (New York: Wiley, 1954).

[24] C. H. Coombs, "A Method for the Study of Interstimulus Similarity," *Psychometrica*, XIX (1954), pp. 183–94; and Coombs and David Beardslee, "On Decision Making under Uncertainty," in Thrall, Coombs, and Davis, *op. cit.*, pp. 255–84.

[25] Coombs and Beardslee, *op. cit.*, p. 262.

numbers to a subjective evaluation of an uncertain situation, then the cardinal hypothesis is, to that analyst, irrelevant. On the other hand, for those of opposite persuasion, maximization of expected (cardinal) utility is a relevant and meaningful hypothesis for the analysis of choice.

Some economists may feel as I about this matter: pleased to relinquish final judgment on the cardinal hypothesis to specialists in another discipline.

INTERREGIONAL COMPARISONS OF THE MARGINAL PRODUCT OF CAPITAL[1]

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I. INTRODUCTION

A method is proposed, in this paper, for comparing the marginal product of capital in a given industry among regions. Thereby the economist will be enabled to answer the question: Are interregional differences in the rate of growth of employment attributable to differences in the marginal product of capital? Once this question is answered, the economist can search for the factors which account for the interregional variations in the marginal product of capital. Are these variations attributable to differences in the capital-labor ratios, in production functions or in the qualities of the resources that regions have access to? Are wage rates positively or negatively correlated with the marginal product of capital, in a given industry among regions? If wage rates are positively correlated, then production functions or the qualities of the human resources, as a rule, will differ among regions in this industry. If wage rates are negatively correlated, then differences in the marginal product of capital could result entirely from differences in capital-labor ratios.

The above questions can only be answered, if interregional comparisons could be made of the marginal product of capital in specific industries. The purpose of this paper is to show how these interregional comparisons can be made. In a stationary economy, the marginal product of capital is equal to the interest rate; and no serious difficulties arise in measuring the marginal product of capital. But the problem under discussion is the relationship between the marginal product of capital and the rate of economic growth. When the units under study are growing economies, what estimates can be made of the marginal product of capital? Moreover, consider a free trade, free capital movement, area such as the United States. Interest rates are essentially uniform among the regions of the United States, *ceteris paribus*; but is the marginal product of capital essentially uniform among these regions? Has free interregional trade equalized the marginal product of capital among regions via the factor price equalization theorem?

II. THE MARGINAL PRODUCTIVITY OF CAPITAL

For any industry in a given region let $y = f(l, c)$, where f is the production function. Let f be continuous with continuous first derivatives. Define y as value added in real terms, and c as the services of the capital equipment, per unit

[1] This paper is based on research undertaken at Brown University as part of a study on Economic Maturity as it Applies to Regional Economic Development. The study is supported by a grant from the Ford Foundation. The author is grateful to George Borts, Michael Brennan, Paul Cootner, Merton Stoltz and the Editors of this Journal for helpful advice and criticism. Only the author is responsible for the views expressed here.

of time. The returns, per unit of time, to all employees, l, are wages (and salaries), the returns to c are proprietary income.

No assumption is made regarding the uniformity of production functions among regions or industries. Each region and industry is considered to possess its own production function, and estimates of the marginal product of capital are derived from each production function separately.

The level of technology known has not been included as an independent variable in the production function. There are two reasons for this omission. First, we agree with Schumpeter that: "In a system in which the process of evolution goes on strongly, it is presumably not very far from the truth to say that practically all new plant that is being constructed beyond replacement, and much of what is being constructed by way of replacement, either embodies some innovation or is a response to situations traceable to some innovation."[2] Second, the level of technology is not easy to measure.[3] For these two reasons, we subsume the level of technology under the variable "c." As a result of the failure to separate the quantity of capital from the level of technique, the production function may be subject to increasing returns to scale. When "c" and "l" increase by x per cent, y may rise by more than x per cent because the new equipment (and the replacements) may represent a better level of technique than did the old.

$$y = f(\mathrm{l}, c). \tag{1}$$

Let the labor force grow from l_0 to $\mathrm{l}_0 + h$, the capital stock from c_0 to $c_0 + k$ and real value added increase by Δy during the period. The quantities k and h need not be small. Since the production function was assumed to be continuous with continuous first derivatives, a mean value theorem permits us to write

$$\Delta y = f_L(q^*)h + f_c(q^*)k, \tag{2}$$

where q^* is an input combination $(\mathrm{l}_0 + ah, c_0 + ak)$, $1 > a > 0$, and $f_L(q^*)$ and $f_c(q^*)$ are the marginal products of labor and capital respectively, given an input combination q^*.[4]

Let the price of the product be p^* when the input combination q^* was used. Then the value of the marginal product of labor was equal to $p^*f_L(q^*)$. Under competition the wage will be equal to the value of the marginal product of labor.[5]

[2] Joseph A. Schumpeter, *Business Cycles* I (New York: McGraw-Hill, 1939), p. 94.

[3] Solow has recently developed a method for measuring the rate of technical progress. However, a knowledge of the rate of growth of capital is required. On a regional basis by industry, no such estimates are available. Cf. R. M. Solow, "Technical Change and the Aggregate Production Function," *The Review of Economics and Statistics*, XXXIX, No. 3 (August, 1957), pp. 312–320.

[4] By using a mean value theorem, one need not be restricted to changes in l and c which approach zero as a limit.

[5] The predictive accuracy of the marginal productivity theory of wages is examined, and held to be compatible with the data, in my article "The Predictive Accuracy of the Marginal Productivity Theory of Wages," to appear in *The Review of Economic Studies*.

Hence, there was a wage w^*, during the period, equal to $p^* f_L(q^*)$. Equation (2) may be rewritten as

$$p^* \Delta y = w^* h + p^* f_c(q^*) k \tag{3}$$

or

$$p^* f_c(q^*) = \frac{p^* \Delta y}{k} - \frac{w^* h}{k} \tag{4}$$

During the period the value of the marginal product of capital,[6] $p^* f_c(q^*)$ was equal to the marginal output-capital ratio, $p^* \Delta y/k$, minus $w^* h/k$: where w^* was a wage prevailing during the period, h is the increment of labor employed during the period and k is the net investment in new plant and equipment that occurred during the period. There are two features of equation (4) to be noted. First, by no means is the marginal output-capital ratio a good measure of the marginal product of capital. Second, conceptually the marginal product of capital can be measured: p^*, Δy, w^*, h and k are measurable magnitudes.

III. THE EMPIRICAL TASK OF ESTIMATING THE MARGINAL PRODUCT OF CAPITAL, FOR A GIVEN INDUSTRY AMONG REGIONS

Suppose that an economist wishes to discover whether a significant relation exists between the rates of growth of employment and the marginal products of capital, among regions in a given industry. Equation (4) tells him how to measure the marginal product of capital; but he will encounter two difficulties when he turns to census data. In this section we propose methods for surmounting these difficulties. It should be stressed that an interregional comparison of marginal products of capital should be made for a given four-digit industry. The grosser (or more aggregative) the industrial classification, the greater the ambiguity concerning the concept of the marginal product of capital. Once we employ an aggregative production function, e.g., for a two- or three-digit industry, our variables are vectors rather than real numbers.

A. *The Change in Value Added*

Equation (4) tells us to multiply the change in real value added Δy by p^*: a price that prevailed during the period. But neither price nor physical output and material input data are always available for four-digit industries.[7] When these data are not available, we suggest that the change in money value added, $V_2 - V_1$, be used instead of the unknown $p^* \Delta y$. The subscripts 1 and 2 refer to the beginning and end of the period respectively. When the price has been rising during the period, $V_2 - V_1$ will be greater than $p^* \Delta y$. To compensate somewhat for this bias, we suggest another change in connection with the use of equation

[6] Changes in output, attributed to technological change, are subsumed under the marginal product of capital. Hence, $p^* f_c(q^*)$ is not the "static" marginal product of capital of the textbooks.

[7] To find real value added, both the money value of sales and the money value of materials purchased would have to be deflated.

(4): Instead of using w^*h, where w^* is between the wage at the beginning and at the end of the period, use the change in the wages (and salaries) bill: $W_2 - W_1$. If the wage has been rising during the period, $W_2 - W_1$ will be greater than w^*h.

When price and output and material input data are available, equation (4) should be used. But, when these data are unknown, an estimate of the marginal product of capital, given input combination q^* can be obtained from equation (5).

$$p^* f_c(q^*) \text{ approx} = \frac{(V_2 - V_1)}{k} - \frac{(W_2 - W_1)}{k}. \tag{5}$$

The numerator is the change in proprietary income, $(V_2 - W_2) - (V_1 - W_1)$ and the denominator is "k," the amount of net investment undertaken during the period.[8]

B. *The Marginal Rate of Return on Gross and on Net Investment*

We seek to discover the marginal rate of return on net investment (i.e., the marginal product of capital) by region, for we desire to evaluate the growth prospects of an industry in a given region. For that purpose "k" in equation (4) and (5) refers to net (not gross) investment to expand capacity. The Census, however, provides data on gross, rather than net, investment. It will be shown here (1) that a ranking of regions by the marginal rate of return on gross investment (i.e., when gross investment is used instead of "k" in equations 4 and 5) need not correspond to a ranking of regions by the marginal product of capital. (2) Nevertheless, it is often possible to infer the ranking of regions by the marginal product of capital from the ranking of regions by the marginal rate of return on gross investment.

(1) *Why the Rankings may Differ.* Several examples will serve to explain why the marginal rate of return on gross investment may differ greatly from the marginal rate of return on net investment (i.e., the marginal product of capital). Suppose that a firm replaces technically obsolete equipment with newer labor-saving equipment. Production would thereby be maintained although some workers were discharged. Proprietary income would then rise and the marginal rate

[8] Advertising expense should be deducted from proprietary income to arrive at a better estimate of the total return proprietors. Insofar as these data are unavailable, we shall assume that the ratio of advertising expense to proprietary income, in a given industry, is roughly the same for firms in each region.

Investment in research has not been included in the figures for new capital investment, although this form of investment must be considered as important as investment in new plant and equipment. Assume that the ratio of investment in research to investment in new plant and equipment is roughly the same in each region, insofar as a given industry is concerned.

When it is assumed that, for a given industry, (i) advertising expenditures as a per cent of proprietary income and (ii) investment in research as a per cent of investment in new plant and equipment, is the same in each region, then the relative marginal rates of return on investment in region A relative to region B will be unaffected by their exclusion.

of return on replacement expenditures would be high. Nevertheless, an expansion of capacity through net investment may be unprofitable, since the firm may not be able to sell the additional output at profitable prices.

Take another example. Suppose that a firm buys a plant which is undervalued, as a result of a depressed state of the market for the product. The purchaser then invests to make the buildings suitable for a resumption of operations and replaces some of the worn-out machinery with newer and better models. Then, the market for the product revives and the firm discovers that it has made a high rate of return on the money invested.[9] The plant sold for a substantially lower price than it would have commanded if the market had not been depressed. Thereby, the purchaser acquired a plant that was undervalued; and when the industry revived a high rate of return was made on the investment. Nevertheless, it may still be unprofitable to build new plants to expand the productive capacity of the firm, since the new plant and equipment would not be undervalued as was the old plant and equipment. It is, therefore, possible to construct examples where the marginal rate of return on replacement investment was quite high and the rate of return on net investment (to expand capacity) was quite low.

The dichotomy between rate of return on replacement only and the rate of return on net investment (to expand capacity) may be found in any industry, particularly one which is not growing nationally or in a region. Consider the soap and glycerin industry in New England. The marginal rate of return was higher, but the ratio of gross investment to value added was lower than in the United States (cf. Fig. I). Did the New England region (point NE) yield a higher rate of return in soap and glycerin because it was highly profitable to replace old or obsolete equipment without expanding capacity, whereas the firms in the United States (point US) as a whole were carrying on net investment and expanding capacity? It is possible that New England soap firms were replacing technically obsolete equipment with newer labor-saving equipment. Production would thereby be maintained although some workers were discharged. Proprietary income would then rise and the marginal rate of return on replacement expenditures would be quite high. Nevertheless, an expansion of capacity through net investment may be unprofitable, since the New England soap firms may not be able to sell the additional output at profitable prices. Firms in the rest of the United States may be expanding capacity. But their rate of return on net investment may be less than the New England firms' rate of return, derived from replacing obsolete equipment with new labor-saving equipment.

(2) *How to Infer the Ranking of Regions by the Marginal Product of Capital from the Ranking of Regions by the Marginal Rate of Return on Gross Investment.* We seek to discover the marginal rates of return on net investment by region. This is our goal, because we want to evaluate the growth prospects of an industry in a given region. If the relatively high rate of return in region A relative to region B is attributable solely to making up arrears in technology, i.e., cutting costs but not expanding output, the industry does not have growth prospects in

[9] The investment in new plant and equipment, on which the objective marginal rate of return is calculated, refers only to newly produced equipment.

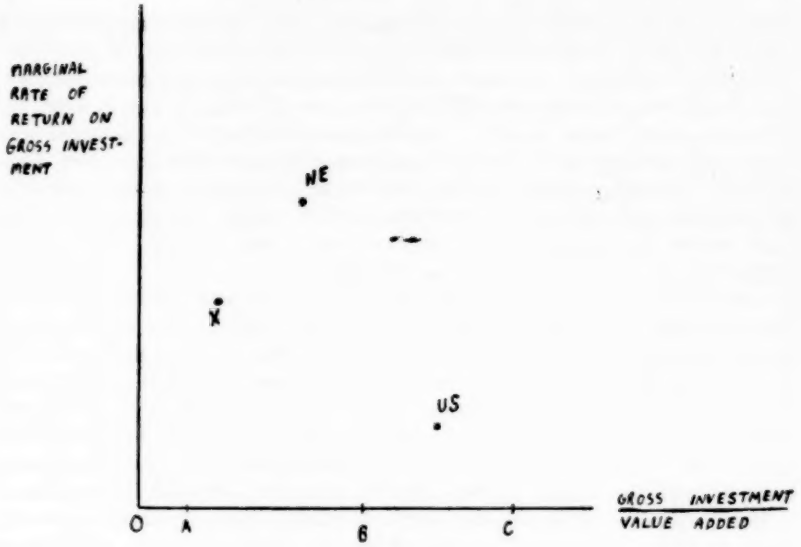

FIG. 1

a region. On the other hand, if the region yields a higher than average marginal rate of return on net investment, it is a relatively attractive location for the expansion of the industry.

Our quest is to determine the rates of net, rather than gross, investment by industry and by region. Depreciation figures are not available for narrowly defined (e.g., four-digit) industries. Therefore, assume that, for a given industry, the ratio of depreciation to value added is roughly uniform by region. We do not know whether this ratio is (in Fig. I) OA, OB or OC. We merely assume that it is uniform for each region.[10] We know that the ratio of gross investment to value added is less in New England than in the United States for soap and glycerin. Given our assumption of uniform ratios of depreciation to value added, we conclude that the ratio of net investment to value added is less in New England. The higher marginal rate of return in New England may very likely have resulted from the mere replacement of old equipment with newer and better capital goods; whereas, net investment may have been undertaken in the United States as a whole. The fact that employment in soap and glycerin fell by 19 per cent in New England and by only 8 per cent in the United States tends to support the view that there was a smaller percentage increase (or a greater decrease) of capacity in New England than in the United States. Replacement only was

[10] The justification for this highly convenient assumption is as follows. If a given industry is growing more rapidly in region A than in region B:

(a) gross investment/value added should be greater and (b) replacement investment/gross investment should be smaller in region A than in region B. However, there is no reason why (*a*) × (*b*) = replacement investment/gross investment could not be the same in each region. We assume that replacement investment is equal to depreciation.

likely to have occurred in New England and some net investment may have been undertaken in the United States soap and glycerin industry.

A different situation occurred in the drugs and toilet preparations industry. The United States situation would resemble point X in Fig. I: that is, both the marginal rate of return and the ratio of gross investment to value added was higher in New England. Moreover, employment declined by less in New England. We infer that a greater relative rate of net investment was undertaken in New England and nevertheless the region yielded a higher marginal rate of return. Hence, the marginal rate of return on net investment was higher in New England than in the United States for this industry.

In general, we examine two magnitudes: (a) relative marginal rates of return and (b) relative ratios of gross investment to value added, for a given industry located in several regions. If the ratio of gross investment to value added was at least as great in New England as in the United States as a whole, we infer that the ratio of net investment to value added was at least as great in New England. Moreover, if the marginal rate of return on gross investment was at least as great in New England, we infer that the marginal rate of return on net investment was as high or higher in New England. Similarly, if (a) and (b) were lower in New England, we infer that the marginal rate of return on net investment was lower in New England. For example, if New England is investing 20 per cent and the United States as a whole is investing 15 per cent of value added, in a given industry, we infer that the ratio of net investment to value added was greater in New England. Say that the marginal rate of return on gross investment was 12 per cent in New England and 9 per cent in the United States as a whole. The higher rate of return in New England could not have been attributable to a smaller rate of net investment relative to value added. Hence, we conclude that net investment was more profitable in New England than in the United States as a whole.

On the other hand, if the ratio of gross investment to value added was 15 per cent in New England and 20 per cent in the United States, we infer that the ratio of net investment to value added was less in New England. The relatively higher marginal rate of return in New England may merely reflect the fact that replacement was undertaken in New England and net investment was undertaken in the United States as a whole.

IV. AN EXAMPLE OF HOW THIS TECHNIQUE CAN BE USED

The reader will obtain a better understanding of the use of the above technique if he sees how it has been actually applied. It is not the purpose of this article to answer the question: Are interregional differences in the rate of growth in employment attributable to variations in the marginal product of capital. Instead, a technique is presented which will enable one to answer this question. In this section we illustrate how this technique has been used in a study of the chemical industries in New England.[11] The small size of this industry in New England

[11] This example is taken from the author's, "Economic Factors in the Location of Industry, Part One: The Chemical Industries." (College-Community Research Program, Brown University, 1957), Part Two.

and the limited data available only permitted us to examine thirteen four-digit industries in the chemical industry group. Economic analysis leads us to expect the rate of growth of employment to be greater in the region with the higher marginal rate of return on net investment. Firms will prefer to establish branch plants in regions with higher marginal rates of return on net investment. The scale of operations of any particular large firm will tend to grow in the region with the higher marginal rate of return on net investment. Similarly, if an industry is highly competitive, the rate of return on capital will tend towards a rate just sufficient to induce firms to maintain their capital intact, and firms will experience difficulty in surviving if they are located in the region with the lower objective marginal rate of return on net investment. Firms and plants will concentrate, for both of these reasons, in the area wherein the objective marginal rate of return on net investment is higher. The rate of growth of employment in a given industry will be higher where the objective marginal rate of return on net investment is higher.

Did this actually happen? Does the economist's analysis, predicated upon profit maximization, conform to our experience? For the set of industries covered in Table One, the answer is yes. When the data and our analysis permit us to say that the objective marginal rate of return on net investment is greater in area A than in B, then in the industries covered in Table One we find in fact that the rate of growth of employment in the industry is greater in area A.

Table One classifies industries into four groups. Group I consists of industries wherein the marginal rate of return on net investment was greater in New England. That is, the marginal rate of return on gross investment was greater in New England and the ratio of gross investment to value added was at least as great in New England, as it was in the United States as a whole.[12] Group II consists of those industries where the opposite was true. For industries classified in these two groups, I and II, we can unambiguously infer whether or not the objective marginal rate of return on net investment was greater in New England than in the United States as a whole.

An unambiguous comparison of the marginal rates of return on net investment is not possible among the industries classified in Groups III and IV. In the former group, the marginal rate of return is higher, but the ratio of investment to value added is lower in New England. This phenomenon may simply reflect the situation that replacement expenditures were being undertaken in New England, with no expansion of capacity; whereas, net investment was being undertaken in the United States as a whole to expand capacity. Insofar as employment declined by a greater rate, or grew by a smaller rate, in New England, the above hypothesis is supported. In all four cases in Group III, employment in New England grew by a smaller rate. Group IV represents the reverse of Group III. A lower rate of return, but higher ratio of gross investment to value added, prevailed in New England than in the United States. Only two observations were found in this group.

[12] In no other region of the United States were both the marginal rate of return on gross investment and the ratio of gross investment to value added greater than they were in New England, in these two industries.

TABLE 1

RELATIVE RATES OF RETURN ON NET INVESTMENT IN NEW ENGLAND AND THE UNITED STATES, 1947–54

	Relative marginal rate of Return	Relative percent of value added Invested	Relative Rate of Growth in Employment
Group I: Higher marginal rate of return and rate of investment			
Toilet preparations	1.46	1.28	1.05
Pharmaceutical preparations*	1.38	1.04	1.17
Group II: Lower marginal rate of return and rate of investment			
Printing ink	0.89	0.61	0.62
Alkalies & chlorine*	0.70	0.85	0.75
Insecticides	0.22	0.90	0.88
Glue and gelatin	−1.38	0.97	0.99
Chemical products, n.e.c.	−0.22	0.80	0.57
Group III: Higher marginal rate of return on lower rate of investment			
Soap and glycerin	7.00	0.42	0.88
Fertilizers	4.83	0.55	0.60
Plastics materials	1.53	0.55	0.76
Paints and varnishes	1.34	0.85	0.92
Group IV: Lower marginal rate of return on higher rate of investment			
Cleaning and polishing prep.	0.37	1.27	0.67
Compressed & liquified gases*	0.92	1.37	1.03

* Data available for Northeast region only.

Note: We divide the New England marginal rate of return by the United States marginal rate of return to obtain the relative marginal rate of return.

Among Groups I and II, where the relative marginal rates of return on net investment could be compared unambiguously, the prediction is supported. In every case, the rate of growth of employment was greater where the objective rate of return on net investment was larger.

The material in this section does not prove that the marginal product of capital is correlated with the rate of economic growth, in a given industry among regions. It merely indicated that (a) given the proposed technique for making interregional comparisons of the marginal product of capital, (b) these variables were perfectly correlated in the small sample of industries covered. It is not the purpose of this article to test the hypothesis that interregional differences in growth rates are attributable to interregional differences in the marginal product of capital. Instead, a method for performing this test is developed; and an example of how this technique can be used was given. It is hoped, of course, that economists will find this technique useful and apply it in detailed studies of interregional differences in growth rates.

SOME FACTORS AFFECTING BUSINESS FINANCING

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This article is intended to shed light upon some important behavioral aspects of large corporations in their relationship to the financial markets (including the money, credit and capital markets); to provide a framework for analyzing the effects of various exogenous factors upon this relationship; and to indicate the form of the net flow of funds between these firms and the financial markets. The exogenous factors considered are those such as the corporate-income-tax policy of the Treasury and *the rate of interest* as determined by the action (or inaction) of the monetary authorities in the short run. The importance of the findings is not limited to large corporations. The operations of these corporations are on a sufficiently large scale to determine how aggregate investment and other aggregate accounts will move.

The restriction to large firms is in keeping with similar types of theories[1] but the theory developed herein may, nevertheless, be applied to the universe of smaller nonfinancial corporations by introducing the proper *obiter dicta*, to allow for the institutional rigidities of smaller firms in their relationship to the financial markets. Such rigidities would include firms unable to borrow from banks at the going rate because of their marginal character, and those which lack easy access, or any access at all, to the capital markets. A basic assumption is, therefore, that large firms are powerful and reputable enough to get funds at some price from each of the major sources. The sources considered are a reduction of holdings of U. S. Government securities, bank loans and the flotation of capital issues.

Occasional reference will be made to specific large manufacturing corporations—those included in the sources-and-uses-of-funds data tabulated by the Board of Governors of the Federal Reserve System[2]—in order to give a concrete meaning to the subsequent theorizing. These data also confirm the tenability of the theory to the extent they are used, but it is not a purpose of this article to present an objective statistical test of significance.

In the theoretical formulation that follows three concepts of equilibrium will be used. The first is the equilibrium between *the expected rate of return* and *the rate of interest*. It is admittedly unstable.[3] The formulation of the theory, nevertheless, enables us to give a simultaneous solution to equations representing

* Professors John N. Webb, Charles Arnold Mathews and William Vickrey must be singled out, along with Mary Ann Frazer, from among those to whom the author has incurred a debt of one kind or another in the preparation of this article. All are, of course, resolved from any responsibility for the commissions and omissions.

[1] See, e.g., James E. Walter, "Dividend Policies and Common Stock Prices," *The Journal of Finance*, March 1956, pp. 29–41.

[2] See *Federal Reserve Bulletin*, July 1953, June 1955 and June 1956.

[3] See Frank H. Knight, "The Business Cycle, Interest, and Money: A Methodological Approach," *Review of Economic Statistics*, May 1941, pp. 53–67.

specific groups of transactions. And, the solution of the equations provides an estimate of the numerical order of magnitude for the elements comprising both *the expected rate of return* and *the rate of interest*. The other two equilibria are so called because they are systems reflecting the volition of businessmen at a given time. The first of these shows the businessman varying through time the size of his asset accounts such as U. S. Government securities, inventories, and plant and equipment, on the assumption that he maximizes his expected[4] return which includes a yield, less a carrying cost, plus a liquidity premium. The other shows the businessman varying through time the forms of financing on the assumption that he minimizes the cost of financing which includes a yield, an allowance for corporate-income taxation and a liquidity-cost element.

I. THE COST OF EQUITY CAPITAL TO THE FIRM

The rationale for selecting the elements comprising *the cost of equity capital* should be indicated before proceeding with the description of equilibria. This section, accordingly, presents underlying assumptions, a description of the distribution of corporate income, an examination of the elements comprising the returns corporations may expect as opposed to those shareholders may expect, and, finally, the method for arriving at the cost of equity funds to a corporation. This is for three reasons. First, the ratio (expressed as a rate) representing *the cost of equity capital* is sometimes questioned.[5] Second, the concept of *the cost of equity capital* is the outcome of a separate identity for shareholders and management. And, third, the cost of these funds is treated as *the fundamental rate for capitalizing the value of capital goods* or as *the rate of interest* (i) for large firms.[6]

There are four assumptions underlying this phase of the theory. The first is that ownership is largely absentee. That is, the policy-making unit of the firm has a separate identity from that of the shareholders. This assumption is consistent with the generally recognized facts that management of large corporations is professional and the firms have undergone stock splits to broaden ownership with the effect of further weakening direct[7] control by ownership. The second is that the behavior of the policy-making group within the firm is independent of

[4] By stating the assumption in terms of maximizing the expected return we avoid any intanglement about the quality of the knowledge on which the expectation is based.

[5] See W. H. White, "Interest Inelasticity of Investment Demand: A Case From Business Attitude Survey's Reexamined," *The American Economic Review*, September 1956, pp. 565–587; David Durand, "Cost of Debt and Equity Funds for Business: Trends and Problems of Measurement," *Conference on Research in Business Finance* (New York: National Bureau of Economic Research, 1952), pp. 216–247; and Warren L. Smith and Raymond F. Mikesell, "The Effectiveness of Monetary Policy: Recent British Experience," *The Journal of Political Economy*, February 1957, pp. 18–39.

[6] This is in keeping with the meaning Fisher gave to *the rate of interest*. He noted that there are a great variety of interest rates that varied according to risk, and included "not only the implicit interest realized by the investor who buys preferred stock." He continued by saying, "We may even include the rates realized on common stock." See Irving Fisher, *The Theory of Interest* (New York: Kelley and Millman, 1954), pp. 206–207. See also Fritz Machlup, *The Stock Market, Credit and Capital Formation* (London: William Hodge and Company, 1940), pp. 22–23.

shareholders and directed toward the goal of maximizing *the expected* rate of profit for the firm. This is consistent with empirical observations[8] which indicate that the firm's policy makers seek to maintain or enlarge the firm's trade position (or their control over corporate affairs).[9] The third is that holders of shares enjoying a wide market will generally maximize their expected return from shareholding when no additional risk is incurred in doing so. We have no satisfactory empirical support for this assumption *per se* but it seems plausible. The fourth is that, generally speaking, the expectations of management and of shareholders vary together. This synchronous movement need not reflect automatic or imitative responses, but may be the result of many individuals reacting to the same change in the setting.[10] Two indicators of business sentiment support this assumption. Stock prices and the rate of investment in real capital generally expand and contract together over the business cycle.[11]

Corporate earnings are distributed in the form of income-tax payments, retained earnings and dividends. For the years 1946 through 1955 large corporations distributed 41.7, 30.9 and 27.4 per cent of earnings to taxes, dividends and retained earnings respectively. Therefore, earnings per share (E) are equal to income-tax payments per share (T) plus dividends per share (D), plus retained earnings per share [$E - (D + T)$]. In highly rounded numbers, earnings have been distributed in the proportions of 50, 25 and 25 per cent for taxes, dividends, and retained earnings respectively. On this latter basis, if earnings were 20 per cent of share prices, taxes would be 10, dividends 5, and retained earnings 5 per cent of share prices.

On the basis of the above assumptions and our observations of the distribution of corporate profits, let us examine the composition of the return to shareholders

[7] The term "direct control" is used so as not to exclude the control shareholders may have over managerial decisions via the market price of shares.

[8] See, for example, Paul G. Darling, "The Influence of Expectations and Liquidity on Dividend Policy," *The Journal of Political Economy*, June 1957, pp. 209–224; and John L. Meyer and Edwin Kuh, "Financial Patterns, Dividend Policy and Trade Position Motivation," *The Investment Decision: An Empirical Study* (Cambridge: Harvard University Press, 1957), pp. 136–158.

[9] The assumption that the policy-making unit of the firm will direct its behavior toward maintaining or enlarging the firm's trade position implies that they will act so as to maximize expected profits. To maintain the trade position when assets are expanding rapidly requires that firms have access to external funds at sufficiently favorable rates in relation to the other firms and this, in turn, requires that management consider the profitability of its performance with reference to stockholders.

In maintaining or enlarging the proportion of the total investment by the trade of which the firm is a part, the policy-making unit may be said to anticipate the most profitable output for the industry as a whole and then to anticipate and direct investment toward achieving the most profitable proportion of the industry's output for their firms. Within the equilibrium system summarized in part V of this article profits are maximized at the point where *the rate of interest* (i) and *the expected rate of return* (r) are equal.

[10] See George Katona, *Psychological Analysis of Economic Behavior* (New York: McGraw-Hill Book Company, 1951), pp. 43–57.

[11] See "The Stock Market as a Business Barometer," *Factors Affecting The Stock Market* (Washington, D. C.: U. S. Government Printing Office, 1955), pp. 28–29.

as opposed to the elements that enter into the cost of equity funds for the corporation. The shareholder, for his part, may expect to receive explicit returns in only two possible forms: dividends to be paid on shares and appreciation in the market value of shares. They may expect to receive dividends only after corporations have shown earnings upon which corporate income taxes must be paid. On the other hand, the corporation enjoying a wide market for its shares is expected to pay corporate-income taxes.[12] Thus, from management's point of view, the first element entering into the cost of equity funds is dividends per share and the second is the corporate-income-tax payment per share. The cost of equity funds to the corporation is not of the same order as the return to shareholders. The corporation may benefit from the expectations of shareholders at no additional cost to the corporation.

If, at any particular time, the market expects the return to the firm from furthur investment in real capital (r') to be greater than the current cost of funds (i) to that firm, then the firm may receive equity funds in the form of retained earnings at no cost to itself.[13] And, in any event, if the firm retains earnings when the market expects the return from additional investment by the firm (r') to be less than the cost of funds (i) to the firm, then, the cost of equity funds to the firm in the form of retained earnings will be reflected in subsequent financing through a decline in the price of its shares. In the latter instance, the shareholder maximizes his expected return without incurring additional risk by selling his shares and placing the proceeds elsewhere in the market.

The market's valuation of a company's shares (P) may be stated algebraically, Treating the stream of prospective earnings as a perpetuity, for simplification. we may say

$$P = \frac{D + (r'/i)[E - (D + T)]}{k},$$

when D is cash dividends per share, E is earnings per share, T is corporate-income taxes per share, $E - (D + T)$ is retained earnings per share, r' is the return the shareholder expects to accrue to the company from additional investment, i is the cost of funds to the firm for additional investment, k is an average (or arithmetic mean from which there may be deviations) of stock yields such as those for securities listed on the New York Stock Exchange.

The methods for arriving at the cost of equity funds to the firm may now be

[12] A corporation characterized by identical management and ownership may find it advantageous not to show earnings, or pay dividends, and to finance mainly by debt financing and in other ways that are deductible from cost.

[13] This statement is not unrealistic. The large corporations that have been referred to increased their retained earnings from 2.7 billion dollars in 1954 to 4.0 billion in 1955, or from 26.2 per cent of earnings to 29.0. In 1955, these corporations made net expenditures on plant and equipment of 6.8 billion dollars. The yields on industrial stocks declined from 4.09 in December 1954 to 3.92 in December 1955, as indicated by Moody's average for 125 industrial common stocks. In other words, large corporations were able to retain a larger proportion of funds in 1955 for additional investment and at the same time they were faced with more favorable yields on common stocks.

demonstrated. First, we recognized that the element representing the tax cost of equity financing was 10 per cent. Second, we recognized that a ratio of dividends per share to share price of 5 per cent was the yield the market required when the same proportion of earnings was being retained as was paid out in dividends. In such a situation, the price of 5 dollars paid to the market for 100 dollars of equity funds was also a payment for an income stream in the form of retained earnings that, when discounted by the rate of 5 per cent,[14] yielded an additional value of 100 dollars to the corporation. Under such circumstances the yield cost for equity funds is, in effect, 2½ per cent. Third, a firm may sacrifice liquidity through some forms of financing, but equity financing involves no such sacrifice. The liquidity cost of equity financing is zero. In sum, *the cost of equity capital*, including a tax cost of 10 per cent and a yield cost of 2½ per cent, was 12½ per cent as derived by the methods employed.

Finally, it is necessary to introduce futurity to bring the methods for estimating the yield and tax-cost elements more in accord with their actual affect on business financing, since the methods were initially based on the distribution of corporate earnings during the post-war years. This means, in the first instance, that the proportion of the yield element actually entering into *the cost of equity capital* will vary with the proportion of earnings businessmen expect to retain. In the second instance, it means that the magnitude of the tax-cost element will depend, not only on prospective earnings, but also on the corporate-income-tax rates expected to prevail in the future. The employment of these methods to magnitudes expected to prevail in the future should cause no great concern, however, for, apart from observable circumstances in the present that may affect the state of prevailing expectations, conditions prevailing in the recent past enter disproportionately into the view businessmen hold of the future.[15]

II. THE EXPECTED RATE OF RETURN OVER COST AND THE RATE OF INTEREST

This section draws upon the Keynesian statement of the investment-demand schedule. What follows, therefore, is a statement of the necessary modifying or limiting assumptions, a brief statement of the relationship between *cost* (C) and *capitalized value* (CV), as well as one describing the relationship between *the expected rate of return* (r), or the marginal efficiency of capital as it is variously called, and *the rate of interest* (i).

There are two limiting assumptions underlying the present use of the concept of *the rate of interest* (i) as a determinant of the volume of investment in instrumental capital (I). First, and as previously stated, the theory is applicable to large firms with access to funds over the range of financial markets at some price. Second, investment by these firms is not a one-shot affair in facilities to produce

[14] The ratio of dividends to share price is appropriate for discounting the stream of retained earnings in this case, rather than the derived magnitude of the cost of equity funds from the sale of new securities. In receiving the income stream of 5 dollars per annum, for example, the corporation is in the same situation as the stockholder.

[15] See John Maynard Keynes, *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace and Company, 1936), p. 148.

a given product; it is a continuous process. The cost of funds to such firms is not quoted for a particular outlay, since these firms are also making large expenditures resulting in new products (or the modification of old ones).

We may say, that the inducement to invest will be strong when the *capitalized value* (CV) of an additional capital good exceeds its *cost* (C). Value is derived by capitalizing the series of prospective annual returns that the policy-making unit of the firm may expect from additional investment in instrumental capital. *Cost* is the *supply price* (or replacement cost) for expanding instrumental capital. It will be expected that additional instrumental capital will be profitable so long as its *capitalized value* exceeds its *supply price*. The inducement to invest can also be stated in terms of the relationship between *the expected rate of return* (r) and *the rate of interest* (i).[16] *The expected rate of return* may be calculated by letting it stand for the rate of discount that will make the present value of a series of prospective annual returns just equal to the *supply price*. The investment is expected to be worthwhile when *the expected rate of return* exceeds *the rate of interest* and vice versa.[17] A rise in *the expected rate of return* indicates a more optimistic outlook for returns, and a decline indicates a more pessimistic outlook.

The ascribed relationship between a more optimistic outlook for returns and *the rate of interest* may be tested by asking[18] the officers responsible for the financial

[16] The reader may be reminded that *the rate of interest* being referred to in this article is fundamentally the rate representing the cost of equity capital to the firm. We may speak of a change in the interest rate, however, and mean a shift in the structure of rates. See D. A. Alhadeff, *Monopoly and Competition in Banking* (Berkeley, California: University of California Press, 1954), pp. 108–172; Robert V. Roosa, *Federal Reserve Operations in the Money and Government Securities Markets* (Federal Reserve Bank of New York: July 1956), pp. 43–52; and J. S. G. Wilson, "America's Changing Banking Scene: III-The Money Market," *The Banker*, June 1957, pp. 394–401.

[17] A schedule relating *the expected rate of return* to investment in instrumental capital can be drawn. When considered in a static position, the schedule would have the rate of marginal (or extra) return diminishing as the rate of investment increases. Variation through time, on the other hand, would be represented by shifts in the schedule. This schedule may also be called the r-curve. Also a perfectly inelastic interest-rate schedule that intersects the demand schedule could be drawn. In such a figure the relationship between *the expected rate of return* and investment in instrumental capital would be such that investment will be pushed to the point where the demand schedule and the interest-rate schedule intersect. A rise in the schedule indicates a more optimistic outlook for profits, and a fall in the schedule represents a more pessimistic outlook for profits. These changes in *the expected rate of return* could also be shown as a time series by plotting the changes in the volume of investment that follow from a rise and fall in the demand schedule against time. For a discussion of other possible alternative shapes to the investment-demand schedule, see J. A. Stockfisch, "The Relationships Between Money Cost, Investment, and the Rate of Return," *The Quarterly Journal of Economics*, May 1956, pp. 295–302.

[18] These questions are posed to give the reader some idea of what the abstraction regarding the effect of interest rate charges means in practical terms. It is, therefore, recognized that serious methodological questions are raised by arriving at the causes of investment decisions by an interview technique. See Robert Eisner, "Interview and Other Survey Techniques and the Study of Investment," *Problems of Capital Formation* (Princeton, N. J.: Princeton University Press, 1957), pp. 513–601.

policy of a firm whether they would go through with planned financing if *the rate of interest* were increased by some given amount. A negative answer to the question would confirm the tenability of the statement, that *the rate of interest* is a determinant of the volume of investment. On the other hand, the relationship between a higher rate of interest and an unchanged outlook for returns may be tested by asking, at times, why corporate funds are, on balance, being returned to the financial markets rather than being invested in additional instrumental capital. An answer to the effect that further expansion seemed less worthwhile would of course confirm the view that *the rate of interest* is a determinant of the volume of investment.

A more functional method of testing the effect of *the rate of interest* on corporate investment is also possible, since there is an imputed relationship between *the expected rate of return* and the level of interest rates. Businessmen having a more optimistic outlook for returns may, at the same time, expect interest rates to be higher as a result of an increase in the demand for funds called forth in response to the higher *expected rate of return*, if they can also assume that central bank action will allow the demand to press against the available supply. If the interest rate is below that expected to prevail in the future, we may anticipate an accelerated increase in the volume of new issues reaching the market and being scheduled to reach the market.[19] On the other hand, it is possible for businessmen having a more pessimistic outlook for returns to expect the interest rate to be lower than that presently prevailing. In this case, we may expect an increase in the volume of postponements of issues previously scheduled to reach the market as well as a decrease in the volume of new issues reaching the market.[20] That *the rate of interest* is a determinant of the volume of investment may be confirmed in this case, by reference to the explanations for the postponement. We may expect the explanations for the most part to be to the effect that the present level of interest rates is above that expected to prevail in the future. The reason for the explanation being given in terms of the level of interest rates rather than returns is doubtless because of a taboo or urge to avoid a pessimistic discussion of returns, especially the outlook for returns for one's own firm.[21]

[19] At times, a limitation must be attached to this statement as it applies to large firms, because in the initial expansion phase that follows a cyclical downturn of a magnitude similar to that in 1949 they can finance an accelerated investment program without recourse to external financing. However, as the program advances these firms become dependent on funds from the financial markets and this withdrawal of funds may be observed to confirm the ascribed relationship between *the expected rate of return* and *the rate of interest*.

[20] To date, the only reasonably complete information relating to the postponement of securities, for which an original offering date had been set, pertains to municipal securities. See *IBA Statistical Bulletin* (Washington, D. C.: Investment Bankers Association of America). It is anticipated that a systematic account of postponed corporate securities offered for sale will be forthcoming.

[21] The implications of this imputed relationship between *the expected rate of return* and *the rate of interest* for central bank action is that their action (or inaction) acts as a stabilizing device upon investment in instrumental capital by effecting changes in the relationship between the prevailing level of interest rates and that expected to prevail in the future.

III. THE PREFERRED COMBINATION OF GOVERNMENT SECURITIES AND OTHER ASSETS

The policy-making units of large corporations are, at times, faced with the decision of paying-out funds to shareholders or of investing the proceeds from sales and other operations in assets such as Government securities or instrumental capital. Investing funds in the Government securities market rather than paying them out as dividends may be regarded as a way of keeping a concern intact at a time when it appears unprofitable to further expand facilities such as plant and equipment. Other conveniencies may also be attached to the holding of financial assets such as Government securities. They may make the firm independent of the credit and money markets at times of temporary disturbances or stringent credit conditions; or they may, at times, provide the firm with income-earning assets as a substitute for a towering cash balance.

The elements comprising the returns that may be expected from holding the various forms of assets may be stated systematically and identified with the preferred combination of Government securities and other assets. This formal statement will be used to give a general explanation of the choices businessmen make in holding assets.

The expected rate of return is composed of three elements:[22]

> (i) Some assets produce a yield or output q . . .
>
> (ii) Most assets, except money suffer from wastage or involve some cost through the mere passage of time . . . they involve a carrying cost c . . .
>
> (iii) Finally, the power of disposal over an asset during a period may offer a potential convenience or security, which is not equal for assets of different kinds . . . There is, so to speak, nothing to show for this at the end of the period in the shape of output; yet it is something for which people are ready to pay something. The amount . . . which they are willing to pay for the potential convenience or security given by this power of disposal . . . we shall call its liquidity-premium 1.

It follows, therefore, that *the expected rate of return* is the total of $q - c + 1$,[23] and that these elements may be substituted for *the expected rate of return* (r).[24]

The accounts which are likely to change largely as a result of the volition of

[22] Keynes, *op. cit.*, pp. 225–226.

[23] For the discussion growing out of Chapter 17 of *The General Theory*, which includes this formulation, see the following: Abba P. Lerner, "The Essential Properties of Interest and Money," *Quarterly Journal of Economics*, May 1952, Vol. LXVI, pp. 172–93; Dudley Dilliard, "The Theory of a Monetary Economy," *Post-Keynesian Economics*, ed. Kenneth K. Kurihara (New Brunswick, New Jersey: Rutgers University Press, 1954), pp. 12–18.

[24] This might be expressed in the following terms. When C is the supply price (or replacement cost) of an additional capital good, r is the expected rate of *return*, $R_1 + R_2 + R_3 + \cdots + R_n$ is the series of prospective annual returns in absolute terms, then

$$C = \frac{R_1}{1 + (q - c + 1)} + \frac{R_2}{[1 + (q - c + 1)]^2} + \frac{R_3}{[1 + (q - c + 1)]^3} + \cdots + \frac{R_n}{[1 + (q - c + 1)]^n}.$$

businessmen are U. S. Government securities, inventories and plant and equipment, although at times some involuntary accumulation to be allowed for may result in the capital accounts. Generally speaking, in response to changes in business demand for the assets represented by these accounts, their respective coefficients (the respective assets as a percentage of the total of the assets represented by the accounts) vary. The asset coefficient for each account will be increased or decreased until *the expected rate of return* from each is equal, at which point total expected return is maximized.

Confining our analysis to the three assets referred to seems justified both on *a priori* and empirical grounds. The other asset accounts are determined by changes in the key accounts, and by the *modus operandi*. Let us take "accounts receivable" and "cash" as examples. A large firm will have a steady group of customers, or infrequent customers with an established credit, or finally, established criteria for the extension of trade credit. In general, once the criteria for lines of trade credit and discounts for prompt payment are established, these do not change radically or capriciously in the short run; and for the most part changes in accounts receivable will depend on the volume of sales. Also, variation in the size of the cash account, in the short run, will depend on the degree of control over the cash flow and the expertness with which the account is managed. No conscious decision is necessarily required to increase or decrease the size of these accounts, as in the case, for example, of the need to place new orders if inventories are to be voluntarily accumulated while sales are increasing.

The preferred combination of those assets reflecting the businessman's volition may be described on the assumption that he will try to maximize the expected return (consisting of $q - c + 1$).[25] In any event, the combination of assets actually held reflects combinations of preference that are equal for the respective accounts and changes in preference are reflected in net changes (increments or decrements) in the accounts, except under occasional conditions of involuntary accumulation. This combination may be stated geometrically, if for simplicity attention is focused on U. S. Government securities, as one asset account, and inventories, plant and equipment, as another. These accounts could be shown respectively on the horizontal and vertical ordinates. On such a graph a point on a line sloping negatively at 45 degrees would represent a given total of the accounts presented, while an increase in that total would be indicated by a rise in the line. Particular points could be indicated on the respective lines to show the preferred combination of Government securities and the other asset account, and the line connecting these points could be called the preferred-asset-combination line. The slope of such a preferred-asset-combination line may be defined by the ratio of the change in the other asset accounts over a given period to the change in Government security holdings over the same period. Changes in the

[25] Keynes isolated these elements to prove there must be a money. It is convenient, however, to use them for the purpose of analyzing the effects of interest rate changes and other exogenous factors upon the form and magnitude of the net flow of funds from corporations to the financial markets, on the one hand, and from the financial markets to the corporations, on the other.

slope of the line, on the other hand, may be represented by changes in the coefficient for Government securities which may, in turn, be affected by cyclical forces as well as other factors to be listed subsequently.

In sum, marginal changes (increments and decrements) in the accounts under the control of the firm make possible the necessary adjustment to bring their respective expected rates of return into equality except during the occasional periods of involuntary accumulation of those assets such as inventories. This equality of the expected rates of return from holding assets may be stated as follows, if we let G stand for governments, I for investment, and P for plant and equipment:

$$q_G - c_G + 1_G =$$
$$q_I - c_I + 1_I =$$
$$q_P - c_P + 1_P .$$

It does not matter, however, where we draw the line between q, c and 1 for assets other than Government securities since we shall be exclusively concerned with the sum of the elements comprising *the expected rate of return*. In the case of Government securities, q_G = interest payment received from holding them, q_G = tax which must be paid on the received interest payment and 1_G = liquidity premium.

IV. THE PREFERRED COMBINATION OF GOVERNMENT SECURITIES AND OTHER FORMS OF FINANCING

The preferred form of corporate financing is closely related to the problem of corporate liquidity.[26] At times, corporate liquidity may be reduced in order to finance capital outlays, and, at other times, it may be increased in anticipation of future capital outlays. An increase in liquidity, such as would result from an increase in Government security holdings, may result in funds being released for small business during times of otherwise stringent bank credit.[27] Or, a decrease in liquidity may result in a release of governments at a time when the Treasury is refunding a large block of securities and consequently it may present difficulties for Treasury financing.

A system showing the preference for alternative forms of financing can be

[26] Corporate liquidity may be measured by the ratio of cash plus Government securities to total-current liabilities.

[27] For example, the net flow of funds from the large manufacturing corporations represented in the composite-sources-and-uses-of-funds data from the Board of Governors of the Federal Reserve System was 2.3 billion dollars in 1950. This was composed of net flows of 2.0 billion dollars to the Government securities market, 0.1 billion to the credit market, and 0.1 billion to the captial market. In this same year, the net reduction of Government securities in the portfolios of all insured commercial banks was 4.8 billion dollars, and the non-financial corporations, other than the large manufacturing corporations represented in the Board's tabulations, were net users of bank funds totaling 3.3 billion dollars. To some extent, therefore, the large firms released credit that was indirectly extended to smaller firms.

described. Such a formalized statement should reveal more of the nature of changes in corporate liquidity as it is affected by changes in Government security holdings and other factors.

The system referred to may be constructed upon the facts of business financing. It reflects, at a given time, the preferred combination of the alternative forms of business financing such as Government security holdings, bank borrowings, or the net sale of capital issues. The firms involved, for example, have access to a sufficient amount of funds over the whole range of financial markets through which to make marginal adjustments according to changes in the preference of their policy-making units. Changes in preference over a period of time will be affected by changes in the magnitude of the respective elements comprising the cost of financing since the least-costly method will be chosen.

These elements may be called the yield (q'), the tax-avoidance premium (c'), and the liquidity cost ($1'$).[28] The yields on the alternative forms of financing have, since the 1920's, ranged from the low on Government securities to the high on common stocks. The tax-avoidance premium (a discount from corporate-income taxes) exist for all forms of financing except equity, in which case it becomes a discount (a sum to be added to the yield cost of equity financing). The liquidity cost is high for financing through the giving-up of holdings of governments and from bank borrowing; a supply of Government securities and absence of bank indebtedness offer convenience and security which may not be sacrificed to the same degree by equity or longer-term debt financing.

Changes in preference may be expected to reflect changes in the yield structure such as a narrower spread between debt and equity issues, a change in the expected rate of corporate-income taxation, or the liquidity cost for the respective forms of financing. We could set forth graphically a system of preferences by reducing the possible alternatives to Government securities, and the other forms of financing as two separate groups represented by the respective ordinates. Furthermore, we could fit a line to the resulting scatter of points showing the preferred combination of these two groups of transactions. Such a curve would show an increasing preference for liquidity represented by the purchase of governments as corporate funds flow into the financial markets.[29]

[28] When CV is capitalized value, i is *the rate of interest*, and $R_1 + R_2 + R_3 + \cdots + R_n$ is the series of prospective annual returns in absolute terms, the elements comprising the cost of equity financing by the firm may be substituted for *the rate of interest*, and the capitalized value of an additional capital good may then be expressed in the following terms:

$$CV = \frac{R_1}{1 + (q' - c' + 1')} + \frac{R_2}{[1 + (q' - c' + 1')]^2}$$

$$+ \frac{R_3}{[1 + (q' - c' + 1')]^3} + \cdots + \frac{R_n}{[1 + (q' - c' + 1')]^n}.$$

[29] Corporate behavior in 1952 and 1954 are exceptions to this general pattern. In 1952, speculation in inventories followed the mid-year steel strike. In this situation the inventories possessed a liquidity premium of their own and other forms of liquidity such as that provided by Government security holdings were exchanged for inventories. See *United States Monetary Policy: Recent Thinking and Experience* (Washington, D. C.: U. S. Govern-

A net flow of funds into the financial markets would be represented by a fall below the point of origin for a line sloping negatively at 45 degrees. A rise in this line above the point of origin would represent a net withdrawal of funds from the financial markets. Movements along the Government securities ordinate to the right of the intersection of the ordinates represent a sale of governments, or a net reduction in holdings of Government securities. Movements to the left of this intersection represent a net increase in holdings. Upward movements along the vertical ordinate beyond the intersection of the ordinates represent a net increase in the use of other forms of financing. Downward movements below the intersection represent a net decrease in the other forms of financing.

In sum, the cost of financing through the alternative methods of financing must be equal at any given time when the several elements comprising cost $(q' - c' + 1')$ are allowed for. In addition, the marginal changes in the alternative methods of financing may be expected to reflect factors affecting the alternative cost of financing as they are reflected in the varying magnitudes of the elements comprising the cost of funds. Finally, if we let G stand for governments, T for bank loans, B for bonds and S for stocks,[30] then the equality of the alternative costs of financing through these various means at a given time may be stated as follows:

$$q_G' - c_G' + 1_G' =$$

$$q_T' - c_T' + 1_T' =$$

$$q_B' - c_B' + 1_B' =$$

$$q_S' - c_S' + 1_S'.$$

V. THE ORDER OF MAGNITUDE OF VARIABLES AND THE FLOW OF FUNDS

The three analytical concepts may now be brought together. This may be done in such a way as to provide a solution for the magnitude of the liquidity elements involved since estimates of the magnitude of the other elements (the yield element and the tax-avoidance premium or tax-cost one) were derived independently.

The preference systems are related to each other through the equality of

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ment Printing Office, 1954), pp. 209, 246 and 248. In 1954, the increase in liquidity took the unusual form of a .7 billion dollar repayment of bank loans by large manufacturing corporations at a time when they reduced their holdings of governments by .3 billion dollars. This diverse movement of funds from the Government securities market to the credit market, however, reflected a lagging decline in the prime commercial loan rate. In both of these years there was also a heavy drain on cash resulting from reductions in corporate-income-tax liabilities.

[30] The use of only the four categories of financial-markets transactions is considered sufficient to demonstrate the theoretical propositions. If others are included, such as long-term bank borrowing or preferred stocks (as a separate category from common stock) or mortgages, the same set of propositions would be applicable.

TABLE 1

MAGNITUDE OF VARIABLES

(rates)

	q'	c'	$1'$	$i = 12\frac{1}{2}$
Financial Markets Transactions				
Stocks	$2\frac{1}{2}$	10	0	$12\frac{1}{2}$
Bonds	4	-2	$10\frac{1}{2}$	$12\frac{1}{2}$
Bank-loans, short-term	3	$-1\frac{1}{2}$	11	$12\frac{1}{2}$
Government securities	2	-1	$11\frac{1}{2}$	$12\frac{1}{2}$
	q	c	1	$r = 12\frac{1}{2}$
Business Transactions				
Government securities	2	-1	$11\frac{1}{2}$	$12\frac{1}{2}$
Inventories		$12\frac{1}{2}$		$12\frac{1}{2}$
Plant and equipment		$12\frac{1}{2}$		$12\frac{1}{2}$

the expected rate of return and *the rate of interest.* The equilibrium system can be presented as follows:[31]

$$r = i;$$

$$q_P - c_P + 1_P =$$

$$q_I - c_I + 1_I =$$

$$q_G - c_G + 1_G = q_G' - c_G' + 1_G' =$$

$$q_T' - c_T' + 1_T' =$$

$$q_B' - c_B' + 1_B' =$$

$$q_S' - c_S' + 1_S'.$$

Having set forth the equations we may now substitute two of the known values and derive the unknown, which is the magnitude of the liquidity elements. The yields (q_G', q_T' and q_B') can be taken from the financial markets. The yield on equity financing (q_S') by large firms may be derived from Moody's average of yields on 125 industrial common stocks as previously described. The tax-avoidance premium, in the case of debt financing, or the tax-cost element, in case of stock financing, may also be derived by the method previously described.

Assuming that the above series pertaining to the financial markets show magnitudes of 2, 3, 4 and 5 per cent for governments, bank loans, bonds and stocks, respectively, and assuming the conditions shown for illustration in part I, we may assign magnitudes to the elements as shown in Table 1.

We may now demonstrate how the liquidity premium becomes a primary determinant of the form of moneyflows during a business downturn, as well as

[31] The formulation of one theoretical system in terms of these equations is in keeping with the original notion of equilibrium as it was borrowed from mechanics. See Frank H. Knight, *Risk, Uncertainty and Profit* (New York: Houghton Mifflin Company, 1933), the preface to the reissue in 1933.

in the initial phase of expansion in the rate of capital outlays. In doing this let us also review the flow of funds in terms of the equilibrium system.

In the initial expansion phase of investment, expectations are buoyant. *The expected rate of return* from holding assets in general increases. Planned capital outlays increase as well as the current rate of real capital investment. With capital assets increasing we may expect Government security holdings by the nonfinancial corporations to increase because of the preference to combine an increase in assets in general with an increase in liquidity. In addition, the outlook for a larger volume of transactions may be thought of as requiring a larger degree of liquidity in the form of governments which provide a convenience in making the larger volume of cash adjustments associated with a more favorable outlook for *the rate of return*. Indeed, such an increase in Government security holdings may partly result from the sale of securities in the capital markets to provide the external financing required for a larger volume of capital outlays and the return of a part of the proceeds to the Government securities or credit markets.

In the contraction phase of investment, *the expected rate of return* from instrumental capital tends to be less than *the rate of interest*. At such times funds flow into the financial markets primarily according to the magnitude of the liquidity premium on the alternative forms of financial-markets transactions. The going concern is faced with disposing of an inflow of funds in the most immediately worthwhile outlet that will at the same time provide the convenience of liquidity. The immediately worthwhile alternative fitting this qualification is Government securities. There is a large liquidity premium on these securities as demonstrated above. The larger volume of funds returned to the financial markets will be through the purchase of Government securities, and the second largest volume will be through the repayment of bank loans, etc.

Change in moneyflows may be expected as a "rolling adjustment" or the crisis phase of the so-called inventory or short cycle approaches. Such a phase would be characterized by a damped expected return from instrumental capital, plans for a smaller volume of capital outlays and a preference to reduce the current volume of capital outlays, some of which may doubtlessly be involuntary such as purchases often associated with inventories at such a time. It may be reasoned that in these circumstances the motives described above for holding governments weaken, and, therefore, the involuntary purchase will be financed in such a way as to bring the level of assets into equilibrium. In operational terms, the policy-making unit of the firm no longer wants to expand assets and yet involuntary expansion is taking place. The alternative to limiting the expansion of assets is, therefore, to dispose of those possessing the highest degree of liquidity.

The other possible noncyclical changes affecting moneyflows may, at times, mitigate and, at other times, reinforce the cyclical changes described. They are speculative situations affecting inventories, changes within the interest-rate structure, changes in corporate-income taxation, and disorderly-market conditions affecting liquidity in any of the respective financial markets, in addition to any large drain on cash which will have some immediate effect on corporate

liquidity. For instance, as may accompany a steel strike, the inventories take on an added liquidity premium. They become more than a stock of goods from which to meet the regular inventory needs imposed by sales. The firm may expect its stocks not only to appreciate in value from an expected rise in prices resulting from the shortages, but they may also expect such stocks to be more highly liquid or readily saleable during the period of shortages accompanying and following the strike period. At such times, therefore, the added liquidity premium on inventories will result in their being substituted for other forms of liquidity as that maintained through Government security holdings.

VI. CONCLUSIONS

The theory developed above includes the elements necessary to analyze changes in the form of business financing, and, in addition, provides a framework for describing, more systematically, the flow of funds between corporate business and the financial markets. On the business transactions side, a myriad of factors may cause a change in *the expected rate of return* from instrumental capital. But when changes in these states of expectations are related to the flow of funds on business and financial-markets transactions, they aid in assessing changes in the form of business financing as well as point out the common fallacy in attributing the decrease in corporate liquidity that precede a "rolling adjustment" or crisis in the short cycle to the availability of bank credit rather than to the interest-cost factor.

In addition, the theory brings such phenomena to the forefront as the higher *expected rate of return* required to effect a given amount of investment because of the taxation of corporate income. It points up the lessened degree of effectiveness of yield changes upon the decision to undergo real-capital investment under the impact of corporate taxation. In other words, an increase in corporate-tax rates expected to prevail has a damping effect on decisions to undertake real-capital investment, by increasing *the fundamental rate for capitalizing the value of capital goods*, but at the same time such an increase in corporate-tax rates reduces the effectiveness of changes in yields. Contrawise, a decrease in corporate-income-tax rates expected to prevail has an exhilarating effect on decisions to undertake real-capital investment by lowering *the fundamental rate for capitalizing the value of capital goods*, but at the same time it increases the effectiveness of changes in yields.

FLOOD CONTROL BENEFITS AND THE TENNESSEE VALLEY AUTHORITY

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Probably the best known and most comprehensive river valley development program of the federal government is the Tennsesee Valley Authority. A government corporation chartered in 1933, the TVA has, among other less specific objectives aimed at fostering regional development, a principal goal of developing the Tennessee River and its tributaries for navigation, flood control, and electric power purposes. The core of the TVA operation is a series of thirty-two major dams—nine in the main stream, the remainder in tributaries—which were either constructed or acquired by it. Designed and operated to function as a single unit in the accomplishment of the triad of purposes, they provide a navigable channel along the 630 mile course of the main river from Knoxville, Tennessee, downstream to its juncture with the Ohio River near Paducah, Kentucky. The dams control flooding on the tributaries, the mainstream, and the lower Mississippi River, and harness the energy of the falling water, converting it into hydro-electric power.

Representing a significant expansion of the sphere of government action far beyond the more limited area of flood control, the TVA has been widely acclaimed as an outstanding economic success, as a model of efficient governmental endeavor that might well be emulated elsewhere. The success of and justification for the enterprise depends in substantial part on the magnitude of flood control benefits that it has created, the value of which is not easily determined. Nevertheless some estimate is essential because justification of this phase of the Authority's program inevitably rests upon an assumption that flood control benefits compare favorably with the costs involved in their provision. The purpose of this paper is to examine the validity of the claims concerning the magnitude of such benefits in order to assess their value as guides to social economic endeavor.

I. ESTIMATES OF BENEFITS

In determining flood control benefits that would accrue in the Tennessee River basin, the common appraoch of the several studies made is to equate flood control benefits with estimates of damages that would be prevented by reducing flood heights by various amounts. The earliest comprehensive estimates were provided by the U. S. Corps of Engineers in their 1928 study of flood damages in the Tennessee River Valley.[1] This study revolved around two determinations—the frequency with which floods of various heights occurred and estimates of damages at each height. The report makes clear that floods are not of consistent magnitude, but rather vary in height with small floods taking place relatively

[1] U. S. Congress, House, *Tennessee River and Tributaries, North Carolina, Tennessee, Alabama, and Kentucky*, Report from the Chief of Engineers, 71st Cong., 2d Sess., H.D. 328, Vol. XXXIII (Washington: Government Printing Office, 1930).

frequently. As the height of the flood rises, the probability of its occurrence declines. The damages from floods would vary similarly. Relatively small damages would be inflicted by the fairly frequent small floods, and major damages would result only from the relatively rare exceptionally large floods. The maximum flood in the latter category that was considered was one of 59 foot stage which would occur only once in 500 years.

The basic monetary data for estimates of flood caused damages was obtained by sending circular letters to judges and mayors through-out the extent of the river requesting their estimates of the damages caused by the large December, 1926 flood. On the basis of a fifty per cent response to this questionable procedure, it was estimated that the flood in question caused approximately $2,650,000 damages and that a 500 year flood would cause damages of $14,350,000. It was concluded that the average annual damage from all floods would be $1,780,000 of which $687,000, or 39 per cent, would occur at Chattanooga, Tennessee. This figure applied only to damage to physical property and did not include indirect losses of any kind.

Although little faith can be placed in the monetary estimates of damages, and thus benefits, because of the unreliability of the basic data, the study shed some light in that it established an inverse relation between the frequency and heights of floods and indicated that damage was concentrated at Chattanooga and, by inference, other cities bordering the river.

The TVA sponsored two investigations of flood damages in 1938. One, conducted by Charles W. Okey, principal civil engineer of TVA, studied the possible value to the lower Mississippi River that might accrue from the TVA system of dams,[2] the operation of which would provide some flood height reductions on that stream. For purpose of analysis the Okey Report, as it is commonly referred to, categorized benefits into two classes—lump-sum and annual.

Increased land values arising from flood protection would constitute a lump-sum benefit. Utilizing 1930 U. S. Census data that showed owner statements of land values for land along the river with various degrees of susceptibility to flooding, it was estimated that partly-protected land had a value of $25 an acre more than unprotected land. It was concluded that the partial protection which would result from a reduction of flood heights by two feet would raise the land values of farms by that amount per acre, or a total of $300,000,000 for the 12,000,000 acres involved.

Other lump-sum benefits were noted in connection with protection afforded cities, railroads, and highways. Cities would save certain costs of investment in local protection works, principally levees. It was estimated that a two-foot flood height reduction would obviate local protection expenditures in the amount of $6,700,000. In addition, if railroad tracks and highways were raised to escape the same damage that would be avoided by lowering flood heights two feet, it would cost $10,550,000 and $1,500,000 respectively. These potential expenditures

[2] U. S. Congress, House, *Value of Flood Height Reductions from Tennessee Valley Authority Reservoirs to the Alluvial Valley of the Lower Mississippi River*, 76 Cong., 1st Sess., H.D. 455, House Miscellaneous Doc. Vol. II (Washington: Government Printing Office, 1939).

would be unnecessary with the lower flood heights and were regarded as measures of benefits.

Turning to annual benefits, the Okey Report determined that floodway lands would receive benefits through prevention of crop losses; prevention of land damage arising from being covered by sand or debris deposits, gullied, or eroded; and prevention of losses to buildings and equipment, furnishings, and stored grain. The resulting savings were totaled and capitalized at six per cent. Similar estimates were made for unprotected land and lands covered by backwater.

Since high water levee maintenance costs would be reduced by lowering floods with a consequent lessening of government expense, this saving was also computed and capitalized at four per cent. Seepage damage losses to crops were estimated and capitalized at six per cent.

Total lump-sum and capitalized annual benefits of $381,378,000 would result from a reduction, but it was not clear that the TVA could lower flood heights by that amount. The principal control would come from operation of the reservoir behind Kentucky Dam near Paducah, Kentucky. Benefits were recalculated on the basis of the operation of this reservoir. Flood height reductions were assumed to be two feet from Cairo, Illinois, to the mouth of the Arkansas River, one foot from there to the mouth of the Red River, and no reduction at and below that point. These benefits are summarized in Table 1.

Although obvious qualifications concerning the accuracy of these results arises

TABLE 1

VALUE OF FLOOD HEIGHT REDUCTIONS ON THE LOWER MISSISSIPPI RIVER[a]

Type of Benefit	Amount of Benefit
Lump-Sum Benefits	
Increase in land values	$150,000,000
Value of benefits to cities	6,700,000
Savings in cost of raising railways	7,300,000
Saving in cost of raising highways	1,000,000
Total Lump-Sum Benefits	$165,000,000
Capitalized Annual Reductions in Flood Damages	
Floodway lands in cultivation	$ 5,313,000
Unprotected lands in cultivation	4,990,000
Backwater lands in cultivation	13,950,000
Levee maintenance	3,173,000
Lands affected by seepage	4,567,000
Total Capitalized Annual benefits	31,993,000
Total	$196,993,000

[a] Assuming a two-foot reduction in flood heights from Cairo, Illinois, to the mouth of the Arkansas River, a one-foot reduction from there to the mouth of the Red River, and no reduction at and below that point.

Source: U. S. Congress, House, *Value of Flood Height Reductions from Tennessee Valley Authority Reservoirs to the Alluvial Valley of the Lower Mississippi River*, 76 Cong., 1st Sess., H. D. 455, House Miscellaneous Doc., Vol. II (Washington: Government Printing Office, 1939), pp. 64.

for statistical reasons, these will not be considered. More important are the three approaches to the determination of benefits to be derived from flood height reductions which are evident in these estimates. First, there are benefits from increased land values. Second, there are benefits in the form of savings that arise from the prevention of physical damage to crops and improvements on the land. Third, there is the avoided cost of achieving equal protection by some other means. The validity of the results is subject to question because of these underlying assumptions, which require examination.

The second and more significant of the two 1938 TVA studies concerned itself with estimates of the value of flood control at Chattanooga, Tennessee[3] where eighty-six per cent of the flood damages on the Tennessee River occur according to TVA estimates. This study had a two-fold purpose: first, to determine the amount of damage that would occur to Chattanooga if each of the recorded floods from 1867 to 1938 recurred in 1938; and second, to calculate the average annual damage this would represent for a similar seventy-two year period.

Maps were made of the parts of the city that would be flooded if there recurred in 1938 the 1867 flood—the highest on record—or the 1917 flood—which was ten feet lower. All property in the affected area was then classified as either residential, commercial, or industrial. Residential damage was computed on a room basis with rates based on the results of a TVA house-to-house survey of the actual damage to property in Paducah, Kentucky caused by a 1937 flood. This was supplemented by studies of the cost of repairing, refinishing, and refurnishing houses of the best, medium, and poorest grades. Consideration was given to the number of houses, the number of rooms, the value of the house and its contents, the character of construction, the number of floors, and the depth of flooding.

In assessing commercial damage, it was assumed that there would be a complete loss of stock and fixtures since this was the experience in both Paducah and Louisville, Kentucky, and since many Chattanooga stores had no second story and had stock in basements. The damage was estimated by appraisers with twenty years experience in Chattanooga. Calculation of industrial damage involved consideration of each industry separately, the floor space involved, and the elevation. It was found that damage was low in heavy industries, but was highest in the textile mills.

Besides these tangible losses to property, indirect damage was also computed. Indirect damage was assumed to be composed of the estimated loss of industrial wages, loss of commercial and clerical wages, loss of industrial output (after deducting wages, material, fuel, and purchased energy), loss of profit on retail sales, loss of receipts by transportation companies and public utilities, and expenditures by relief agencies for those made homeless.

Damage was estimated for a fifty-eight foot flood stage—the equivalent of the 1867 flood, a fifty-three foot flood stage, and a forty-eight foot flood stage. Indirect damage for the latter two stages was computed at sixty per cent and twenty-five per cent, respectively, of that at the fifty-eight foot stage. Utilizing

[3] U. S. Congress, House, *The Chattanooga Flood Control Problem*, 76th Cong., 1st Sess., H. D. 91 (Washington: Government Printing Office, 1939).

TABLE 2

ESTIMATED FLOOD DAMAGE AT CHATTANOOGA IF FLOODS OF 1867–1938 RECURRED IN 1938

Number of Floods	Damages in Millions
11	$ 1–1.4
1	1.9
3	2–2.3
3	3.5–3.6
1	4.1
1	8.7
1	19.0
1	24.0
1	37.6
23	$ 125.2

Source: U. S. Congress, House, *The Chattanooga Flood Control Problem*, 76th Cong., 1st Sess., H. D. 91 (Washington: Government Printing Office, 1939), p. 32.

graphic techniques, a damage estimation curve was derived from which the amount of damages for floods of various heights could be read. Application of the curve to the twenty-three floods of various heights which occurred from 1867 to 1938 provided estimated damages for each flood and a total of $125,200,000 as shown in Table 2. Average annual damage was $1,739,000. The table shows that during the seventy-two year period floods occurred on the average approximately once every three years. Over half of the floods were relatively small and would cause damages of less than two millian dollars each. Major damage would be caused by the three largest floods, equivalent to those of 1886, 1875, and 1867. Recurrence of floods of this height would account for slightly over eighty million dollars of the estimated total damages.

The preceding damages have reflected only losses to wealth. The study stated that intangible losses might be equally important, particularly at Chattanooga, if a maximum flood recurred. The destruction of homes would cause a severe rehousing problem, exposure, and sickness. Many businesses would be bankrupted, and there would be some loss of population.

Industrial development would be arrested without flood protection. As the report states: "The intangible injury to Chattanooga and the *certainty* of the recurrence of floods would place the city at a permanent disadvantage in competition with neighboring cities from floods."[4] There would be a tendency for existing industries that would be heavily damaged by floods to seek more suitable locations elsewhere than Chattanooga. New industries would be reluctant to locate in the city. Pointing out that although the city had developed a sense of false security because the last flood that would have struck the business district occurred in 1886, attention elsewhere had been recalled to floods by their recent occurrence in other large cities with the result that businessmen inquire into the flood hazard to be expected before locating a plant. "Complete flood protection

[4] *Ibid.*, p. 35. (Italics supplied.)

for Chattanooga is necessary to preserve existing values and to restore its former competitive position with cities free from floods."[5]

It is interesting to note at this point that the argument is proceeding along the lines of business awareness of the certainty of floods, with adverse effects on the economic development of the city. The introductory remarks to the study categorized flood hazards into two classes. In one, an occasional flood within a known range allowed adequte adjustment with expense determinable on the basis of past experience. In the second, there is ignorance of the hazard. Property is developed on the assumption of freedom from hazard, but a flood greater than any of those in the past occurs to cause disaster. The consequence of a great flood, or even the threat of such an event, might be to either prevent or reduce investment in the area.

There is an element of conflict in these views. It would appear that proper cognizance is taken of frequent small floods, but there is a seemingly inconsistent appreciation of the dangers of the larger but less frequent floods. Persons outside the area recognize the hazard of the latter and find them a deterrent to business location, but the residents of Chattanooga discount their occurrence because of their infrequency.

The study then revised upward its estimates of the value of flood benefits. Noting that fire insurance premiums were about double the amout paid out for fire losses, it was concluded that the annual average flood loss estimated as $1,739,000 could be doubled and that $3,500,000 could justly be spent annually for flood control. It is estimated that this would provide interest, amortization-operation, and upkeep on a sixty million dollar expenditure for flood control. When intangible losses were considered, an investment of seventy or eighty million dollars was thought to be justified.

Although the Chattanooga study provided the basis for the estimates of the bulk of the benefits from flood control for a time, its factual relevancy became less as the years passed. This led to a revision in the estimates in 1948. Expansion of the city required a new assessment. New commercial and industrial construction and additions to and alterations of existing buildings were appraised together with their contents. Estimates of damages in terms of 1948 dollars were made by owners and others with qualifications to make such appraisals. Damage to new residential construction was determined by doubling the 1938 unit values per room of residential property in order to express them in 1948 dollars and applying these adjusted unit values to residences built after 1938. Finally, the damage estimates computed in 1938 were doubled to convert them into current dollar values. These latter estimates were added to those for both types of new construction to determine the total potential damage that would be caused at Chattanooga if floods of fifty-eight, fifty-three, or forty-eight foot height occurred in 1948. A new damage curve was constructed and used to determine the amount of damages that would occur if the natural peak stages of all floods since 1867 recurred in 1948. It was assumed that the TVA system would reduce

[5] *Ibid.*, p. 34.

peak stages one-third and these regulated peak stages were also applied to the damage curves to determine the amount of damages that would occur with TVA regulation. The difference between these two determinations of damages was the damage prevented by TVA. This sum divided by the number of years covered provided the average annual benefit at Chattanooga and amounted to $4,667,000.

Damage at other communities with less serious problems was determined with less detail by applying unit values in 1938 dollars to houses and other buildings subject to flooding as determined by examination of maps. The average annual loss was estimated at $289,000. Several other small towns and industries outside city limits would receive benefits not included in the study of cities and an allowance of $10,000 per year was made to cover this. Average annual damage prevented to agricultural land below both the tributary and mainstream dams was estimated at $465,000. This was based on the premise that benefits declined with the distance below the dam in question and the assumption of a crop damage of $10 per acre in May and $30 per acre in later months.

The value to the lower Mississippi was revised from the original determination in the Olney report. Benefits to railroads, highways, crops, and property on the lower Ohio and Mississippi and estimates of reduced levee maintenance costs

TABLE 3

ESTIMATED FLOOD DAMAGES PREVENTED BY THE TVA RESERVOIR SYSTEM, 1936–1953

(thousands of dollars)

Fiscal Year	Damages Prevented		
	Chattanooga	Lower Ohio and Mississippi	Total
1936	2,609	—	2,609
1937	19	—	19
1938	—	—	—
1939	—	—	—
1940	—	—	—
1941	—	—	—
1942	—	—	—
1943	1,065	—	1,065
1944	333	—	333
1945	—	970	970
1946	12,215	500	12,715
1947	11,495	480	11,975
1948	12,940	1,600	14,540
1949	860	200	1,060
1950	3,430	1,800	5,230
1951	350	—	350
1952	—	400	400
1953	—	—	—
Total	45,316	5,950	51,266

Source: Tennessee Valley Authority

were doubled to put them on a 1948 basis. This amounted to $1,364,000. Three per cent of the $150,000,000 of increased land values as determined in 1938, or $4,500,000, was considered the average annual benefit of that kind.

The total of these estimates of average annual benefits was $11,295,000 which was rounded to $11,000,000. It is interesting to observe that this figure was not doubled as was the 1938 estimate on the assumption that to do so would be appropriate because fire insurance premiums tend to be double loss payments. It was apparently noted that this could not be done legitimately because the nature of the risks was inherently different.

The TVA has also made additional annual estimates of the amount of damages it has actually prevented each year, beginning in 1936 when Norris Dam—the first in the system—became operative. These are presented in Table 3.

II. AN ECONOMIC PERSPECTIVE ON FLOODS

The difficulty of preparing accurate estimates of the value of flood control is apparent, perhaps, from the preceding discussion. The problem may be divided into two parts: establishment of a conceptual framework within which data may be collected as a base for estimates, and actual collection of the appropriate data. Development of a conceptual framework involves establishment of necessary underlying assumptions expressing the economic factors involved. Error at this point will negate the validity of the estimates. Their importance behooves one to formulate them carefully. For this reason, certain economic aspects of flood control will be examined.

The most striking aspect is that flood losses are caused by man. As White has pointed out: "The frequency and magnitude of floods have been increased in a few cases by exploitation of upstream lands, but elsewhere the flood menace has changed little while man moved into the path of the flood."[6] The individual voluntarily assumes the risk of loss by moving into flood prone areas, obviously attracted by the potential economic advantage offered by the available land resources. Assessment of the benefits from flood control must proceed from this premise which makes it necessary to examine considerations that are relevant to the individual under these circumstances in evaluating potential benefits from flood control protection, such as that received from TVA.

The possibility of flooding will affect the usage and value of the land of a flood plain with the effect of lessening its value because of interference with its productive capabilities. The degree of effect will depend on the degree of interference. Consider Case A in which a given plot of land may be subject to such frequent flooding that it is unusable. Such land would have no economic value.

Alternately in Case B, assume the land is flooded for a short period annually, is unusable during that time, and the period is identical during each year. The land would have some economic value because it could be used for some production during the remainder of the year. The uses would be limited, however, with consequent depression of its value. Furthermore, the use of other resources in

[6] Gilbert Fowler White, *Human Adjustment to Floods: A Geographical Approach to the Flood Problem in the United States* (Chicago: University of Chicago Press, 1945), p. 2.

conjunction with the land would impose costs not common to flood-free land. These would be costs occasioned by the removal of these resources from the path of the flood or by their damage or destruction. The value of the land would have to reflect this eventuality. Its productivity value would be less to the extent that these costs existed. The land's value would act in a compensatory manner. Its own value would decline, not only because flooding would lessen its productivity directly, but also because it must compensate additionally for the losses to other productive factors used jointly with it. This would be true regardless of the nature and form of the loss to the other resources. If the value productivity of the land after these deductions is negative, the land will not be used because adequate remuneration cannot be offered to attract other resources into use conjunctive with that of the land.

Case C assumes the possibility of flooding but, unlike Case B, there is uncertainty as to the specific time or extent of flooding during or among years. Records may be available concerning past floods to provide such information as flood seasons and the frequency of floods of various heights. Frequency data may show a high probability of small floods and a declining probability of larger floods, with extreme floods occurring, on the average, only once in centuries. While this element of uncertainty adds complexity, it does not alter the basic principles of Case B in that first, the resources used with the land must be adequately remunerated to retain their use; second, the value of the land will retain its compensatory function in that its productivity value will be lowered to account for the additional costs incurred in utilizing other productive factors with it; third, the value productivity of the land over time must not be negative, but must be either zero or positive for the land to be used. If the value productivity is zero, the land will be marginal and no payment will be made for its use; if it is positive, some payment will be made.

The preceding theoretical discussion indicates that the value of land plays a peculiar role in compensating in advance for possible losses that may be incurred in flood plain occupance. It has been predicated on rational thought on the part of the occupants. Rationality is not, however, an unfailing characteristic of human-beings, and the nature of floods promotes some irrationality because of its variable behaviour. The event of a flood of a given size dramatically impresses the occupants of a flood plain with the costs involved in using such an area. As time passes and the flood does not recur, the significance of flood plain occupancy and its attendant costs tends to recede from the mind and future danger is minimized. This leads to a short-run distortion in land values because the productivity of the land is not sufficiently discounted to allow for flood costs. The same effect may occur for a more rational reason. The infrequency and uncertainty in the happening of large floods may cause the occupant of the flood plain to "gamble" that they will not occur during his usage of the land. Land values, as a result, may tend to be excessive except immediately following a flood and irrational land usage is promoted as the cost of land loses its efficiency as an equalizer.

Although these arguments point to factors that tend to vitiate compensatory

land pricing, they must not be carried so far that they entirely negate this function. How far irrationality may be extended is indeterminate, but it is worth recalling a previously mentioned observation that floods elsewhere in the nation impressed businessmen with the flood hazards of the Tennessee River. Awareness of flood dangers, then, does not depend entirely on their actual occurrence in the particualr flood plain. This sort of situation tends to act as a warning system to maintain proper cognizance of the flood potential of the river valley even though no large floods occur over some considerable period. It has also been noted that there exists a sense of certainty that floods would occur, with consequent ill-effects on the desirability of industrial location and encouragement of a population exodus of a significant degree. There appears to be a substantial amount of awareness of the flood problem with a subsequent lessening, but probably not elimination, of the distortion of land values due to ignorance or irrationality.

Intangible benefits—such as the prevention of damage to health, loss of life, inconvenience, feelings of insecurity, and perhaps other psychological involvements—have been proposed as being substantial values of flood control. It is difficult to attach quantitative significance to this area of benefits because extreme irrationality may creep into an assessment by an observer. As one writer noted: "It is easy to allow the drama of flood disaster to distort the importance of benefits, and no indirect benefits is more subject to emotional bias than prevention of the loss of human life."[7] He goes on to point out that after the 1937 flood in the Ohio Valley which took 140 lives and drove 500,000 from their homes, the Chief of U. S. Army Engineers said the real justification for a proposed protection program for the valley was the saving of human life and suffering. Noting that pneumonia, which caused a large per cent of these deaths, annually claims 150,000 lives in the United States, White uses conservative cost estimates of public health officials to prove that the approximately $3,000,000 annual cost of the completed Ohio River reservoir system would make possible the saving of about 4,800 lives of pneumonia victims annually.[8] This analysis illustrates that any determinations of the magnitude of the value contribution of TVA flood control in this area would be of questionable authenticity. Some benefit undoubtedly occurs but the question is how small an expenditure in some other way would produce an equally great effect.

The discussion of land values revolved around purely economic considerations, but it would seem apparent that they cannot be entirely divorced from these intangible factors. It would be illogical to assume that attention had not been given to the balance of economic and non-economic factors. Presumably, the actions of the inhabitants are prompted by motives of maximizing their welfare and the general assumption that their welfare will be maximized by occupance. Material gain is a significant element of welfare, but the two are not necessarily synonomous concepts. The intangible benefits of flood control would constitute other relevant elements of welfare.

[7] *Ibid.*, p. 154.
[8] *Ibid.*, p. 155.

Assuming some rationality in man, together with a propensity to consider the factors that determine his own welfare, it would be illogical to ignore the possibility that his determinations might involve the weighing of economic gains against intangible losses. This would be particularly true in circumstances in which the losses are avoidable at his option. That this option was not exercised is apparent in the obvious fact that the flood plain is occupied, leading to the belief that the determination was made that economic gain overbalanced potential intangible losses. The ability of the flood plain to provide this is dependent on the land values as was previously discussed. It may be concluded, therefore, that the land value must decline not only by an amout sufficient to account for the economic losses, but also to compensate for the intangible costs inherent in flood plain occupance.

III. EVALUATION OF MONETARY STATEMENTS OF FLOOD CONTROL BENEFITS

Statements of the value of flood control purport to indicate the increase in social welfare that would occur if it is provided. The welfare increase accrues to those who occupy the flood plain and thus the value claims represent what these persons would be willing to pay for such protection. The TVA estimates may be regarded as their assessment of the demand for flood control and, in their opinion, a conservative monetary estimate. Although these demand estimates represent an apparently conscientious attempt to achieve accuracy, they are subject to rather serious qualifications concerning their validity.

It has been previously noted that the Okey Report based its benefit estimates for the lower Mississippi River on increases in land values and the savings that would arise from the prevention of losses to crops, supplies, and facilities on the land. Sufficient theoretical analysis has been engaged in to show that because of the behaviour of land values in a flood-prone area, these are essentially alternative, not complementary, methods. To employ them both is to engage in double counting. Furthermore, since they are alternative methods, each should yield an estimate of benefits approximately equal in magnitude to that provided by the other. But this is not the result obtained. The increase in land values accounted for about three-fourths of total benefits and the other gains provided the remainder. The inequality in the estimates resulting from the two approaches leads to the suspicion that either the former are seriously overestimated or the latter underestimated.

This is not the only conceptual error in the Okey Report. The avoided cost element is clearly a moot component since it focuses on costs of achieving a result without determining whether or not the result is worth the contemplated costs. Obviously, if the result is not of sufficient value, the costs are not justifiable and cannot achieve the status of benefits. This approach could only be used when it is clearly established that expenditure will be made to achieve the result and the only question concerns alternative methods of accomplishment.

The TVA's estimate of average annual benefits that would be derived from flood protection at Chattanooga and other places on the Tennessee River consisted of an enumeration of specific losses—the assessment of physical

property damage and losses due to interruption of production, supplemented by bleak but vague references to sizable intangible losses. The errors of the Okey Report are largely avoided but other questions emerge.

A possibility of substantial overstatement of losses prevented by flood control exists because the growth in use of the flood plain that has occurred during the existence of TVA is partly accounted for by the fact that the users of flood-prone lands are not required to pay for the costs of protection. It is possible that over-development has taken place under these circumstances that would not have if the costs had been borne by the beneficiaries. This point is demonstrable in the following way.

Suppose that a given plot of land may be used for two purposes—A and B. Assume that if no flood control existed, the land would have a positive productivity if used for purpose A, but a negative productivity if used for purpose B. Under these circumstances the land would be used for the former purposes and would pay rent equal to that productivity. If flood control is provided without cost to the landowner, the productivity for both purposes will rise. On the premise that the productivity for purpose B is then higher than for purpose A, it is clear that land use will shift from purpose A to purpose B. If it is further assumed that the productivity of the land for purpose B is less than the cost of providing flood control and the cost is not borne by the landowner, then uneconomic development has occurred because private costs are less than social costs. To measure the losses directly as TVA has done at Chattanooga is to secure an overstatement of loss, since such losses would not have occurred if costs had been properly assessed on the property owners. Uneconomic development of this sort has likely occurred, especially in Chattanooga and other cities along the river.

While not connected with the amount of benefits, another significant factor is that provision of flood control gratuitously provides a subsidy to the landowner to the extent of the cost of the flood control protection. Reflection on the preceding example will indicate this. Use of the land for purpose B would provide no rent possibilities before flood control because it would be submarginal. After flood control it would have a positive productivity and would provide rent. Its ability to pay rent in the latter case would be negative, however, if it were assessed the costs of flood control. In other instances, productivity might rise sufficiently high to more than cover the costs of flood protection. Its rent would be the productivity less the costs of flood control. Since these costs are not assessed, the total sum will be rent and the subsidy will equal the costs of flood protection.

Doubling of the 1938 losses to express them in terms of the 1948 price level appears to be unwarranted. It is true that the price level rose and the U.S. Department of Commerce's composite construction cost index doubled over the period, rising from 51.7 in 1938 to 103.0 in 1948. At the same time, the buildings, houses, and much equipment were a decade older, and the loss would be substantially less than double because, even though maintained, their value would have had a tendency to diminish because of depreciation, especially the ob-

solescence element. If this factor were properly accounted for, the 1938 losses would not have been increased by doubling, but only to some lesser extent. There appears to be an inflation of loss in the estimates for this reason.

Average annual losses also are subject to another statistical criticism because of the fact that losses from large floods appear to be given too much weight. Large floods tend to do the bulk of the damage; however, it has been established that the larger the flood, the less likely it is to occur. The TVA's computation of average annual benefits was made by dividing total computed damages for floods of different sizes by the number of years of record. Thus, in 1938 the damage that would be caused by a flood the height of the one that occured in 1867 was averaged by dividing by seventy-two years. It has previously been noted that the U.S. Corps of Engineers described the 1867 flood as having a probability of occurrence of once every 500 years. The 1938 TVA computations indicate the assumption that it would recur every seventy-two years and their 1948 computations assumed eighty-two years. Although the 500 year estimate may be too optimistic, the TVA estimate would seem too pessimistic. The result of the TVA procedure is to raise the average annual flood damage estimate substantially.

Double counting of loss occurs in two places in the estimates because of failure to account for depreciation. Damage to physical property was assessed on the basis of replacement costs, but this ignores the loss in value from the wear and tear of use and from obsolescence. Appraisal of loss should have commenced with the depreciated value of the property. Also, the estimates of indirect losses included loss of value added in manufacturing which was determined by deducting certain operating, or out-of-pocket, expenses—wages, materials, fuel, and purchased energy costs. This would mean that industrial production losses were composed of the remaining costs which include depreciation charges. But depreciation has already been included in the estimates of the direct loss in value of the property due to damage. In both cases failure to take proper cognizance of depreciation has resulted in an inflated estimate of losses—thus of benefits.

The benefit estimates are misleading from another standpoint. It would be presumed that an estimate of average annual benefits would represent the average value of benefits that would be available at the time they were made. Thus, the 1938 estimate of average annual benefits of $1,739,000 normally would be interpreted to represent the average benefits available in that year as well as succeeding years. This, however, is an erroneous interpretation because the system of dams was not completed in 1938—was, in fact, only begun. It would be a valid estimate only at the time when the system was completed, a time some distance in the future. Any estimates of this sort would have to take cognizance of the various stages of completion of the system of dams through time.

Four general periods may be discerned in the development of the TVA system for demand estimation purposes. In the period from 1933 through 1935, prior to the completion of Norris Dam, no protection could be provided Chattanooga

and no benefits would arise. From 1936 through 1942 the major protective works for Chattanooga were under construction, with some being completed. From 1943 and thereafter, maximum protection was practically available for that city. Commencing in 1945 with the completion of Kentucky Dam, maximum protection was practically available for the lower Ohio and Mississippi rivers, although little was available for these areas prior to this. It is clear that the 1938 estimate of average annual benefits is not valid for that year but is principally an estimate of potential benefits that would be derived when the system was completed in major form. Specifically, this would mean 1943 for the Tennessee River and 1945 for the Ohio and Mississippi rivers.

It might appear that the annual estimates of damages actually prevented, as shown in Table 3, would provide valid measures of the value of benefits actually created. This is not true, however, because they possess the flaws attributed to the average annual estimates with the exception that the averaging objection would be eliminated. The figures would tend to understate in this respect because they would not account for larger floods that might occur, although it is doubtful that this would be a large factor.

The estimates of benefits appear to represent a gross exaggeration and leave the general magnitude of benefits unknown. It would seem possible to obtain some more appropriate indication of their size if certain manipulations of existing estimates were made. Adjustment of these could account for variations in the amount of protection available through time according to the stage of completion of the flood control system and allow for the seemingly strong upward bias in the 1948 estimate of average annual benefits. To reflect the fact that no protection for Chattanooga existed prior to 1936 but increased to a near maximum in 1943, an approximation of demand could be made by utilizing half the $1,739,000 estimate of average annual damages computed in 1938. This would mean that on the average during this period from 1936 through 1942, the potential damages that could be prevented—or the average annual demand at Chattanooga—would be about $870,000. The estimate of potential average annual benefits rather than of damages actually prevented was used as an estimating base because the latter seemed to be too conservative since damage was prevented in only two of the seven years. This criticism does not hold for the estimates of actual damages prevented for the remaining period and an average of them would be usable. The total of these at Chattanooga during the eleven years from 1943 to 1953 is $42,688,000 and the average is $3,880,727, or a rounded figure of $4,000,000. Total damages prevented on the lower Ohio and Mississippi for the nine years from 1945 to 1953 inclusive is $5,950,000 and the average is $661,111 which may be rounded to $700,000. These figures are summarized in Table 4. Although they obviously cannot pretend to be an accurate representation of the benefits that stemmed annually from TVA flood control, they may be regarded as approximations which provide some clue as to the general magnitude of the demand for that flood control. In the opinion of the writer, they represent liberal estimates.

TABLE 4

DEMAND ESTIMATES FOR AVAILABLE TVA FLOOD PROTECTION, 1933–1953

Years	Demand		
	Chattanooga	Lower Ohio and Mississippi Rivers	Total Demand Each Year
1933–1935	$ 0	$ 0	$ 0
1936–1942	870,000	0	870,000
1943–1944	4,000,000	0	4,000,000
1945–1953	4,000,000	700,000	4,700,000

IV. CONCLUSION

Serious questions have been raised concerning the accuracy of the estimates of flood control benefits that the Tennessee Valley Authority has provided. Flaws were demonstrated to exist in the assumptions on which they were based and these were sufficient to indicate that the estimates are exaggerations with discrepancies of apparently considerable magnitude. It appears that there is far less justification for the flood control program of the Authority than is commonly believed to exist. Although it may be true that the program is justified economically, proof would require not only a better determination of the value created but also a test of its adequacy relative to the costs of creating that value.

In addition to the vagueness of the economic value of flood control, another debatable aspect concerns a secondary result—the subsidy accruing to landowners who escaped the costs of flood control yet reaped the benefits of the resulting increased productivity of their land. The subsidy appears in the form of a higher rental if the land is retained or, if the land is sold, the increased productivity is capitalized in the price of the land for the benefit of the seller.

From a more general standpoint, it is clear that departure from the ordering of economic endeavor by the price system presents serious problems. Activity is directed by estimates of value—estimates that are attempts to determine what individuals would be willing to pay for benefits. They are indicative of value in the sense that they infer from rational, visible considerations, but are not precise because they ignore invisible factors to which individuals attach weight. As guides to public action, the estimates are faulty directives that can lead to undesired results.

It seems unnecessary to rely on the estimates as guides to the value of flood control, in any event. There is no cogent economic reason why the direct beneficiaries of flood control should not be allowed to express their demand for the protection. The beneficiaries are identifiable as those occupying the flood plain. Furthermore, it is clear from the discussion of the behaviour of land values that benefits are focused in the land. This readily permits application of a levy against land as a feasible means of exacting payment from beneficiaries. Although the dollar size of assessments would not be determined by market forces and would

contain elements of coercion, it nevertheless would provide a more accurate value determination than mere estimates and would localize the coercion on those who stand to gain rather than spreading it over the nation. It would force a more rigid examination of benefits because it would require those who claimed benefits to substantiate their claims by bearing the cost. The consequences would be to promote better resource use, provide a more dependable guide to public action, eliminate the tax burden on those unaffected by floods, reduce pressure on legislators for public projects for the benefit of a particular group, and relieve the strain on the tax system.

AN ANALYSIS OF FOREIGN AID ADMINISTRATION IN KOREA *

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For over a decade the United States has been devoting a substantial portion of its resources to the rehabilitation and development of the Republic of Korea. The specific military, political, and even economic objectives motivating this aid encouraged the planning of expenditures and induced a complex system of controls to supervise the allocation of aid dollars. This article examines the structure of aid administration in Korea as of September 1, 1957, and attempts to assess its economic efficiency. The aid program, being predicated upon certain policy goals, precludes the distribution of aid goods purely in accordance with market desires. However, the market may still be used to appraise the relative efficiency of alternative administrative options: It will be assumed that the smaller the deviation from a free market allocative criterion the greater the efficiency, other things being equal.

Within the scope of these concepts, Section I will contain the broad categories of aid expenditures in Korea and a brief outline of the present procedure in the allocation of "non-specified end user" funds. Section II will analyze this institutional framework and define certain standards of efficiency. Section III will briefly analyze the "specified end user" portion of the program, while Section IV will suggest how waste may be minimized within an alternative administrative system.

I

Section 142 (a) (10) of the Mutual Security Act of 1954, as amended, governs the extension of aid under Title I of this Act. A nation must agree to permit observation by the United States of programs of assistance authorized under this title, and to provide such information with respect to these matters as the United States may require.[1]

The responsibility for observing and reviewing Defense Support and Technical Cooperation assistance is discharged by the Department of State through the International Cooperation Administration (ICA), which is represented in Korea by the Office of the Economic Coordinator for Korea (OEC). Military assistance and Direct Forces Support are administered by the Department of Defense.[2]

The Republic of Korea has agreed to maintain and to make available to the United States Aid Representative the accounts and records pertaining to the aid program, and to establish an operating agency to handle, in consultation

* I am greatly indebted to Professors William R. Allen and Paul T. Homan for constructive criticism.

[1] *Report on Procedures and Controls Established by the Republic of Korea for Administrating International Cooperation Administration-Financed Assistance*, United Nations Command, Office of the Economic Coordinator (UNC/OEC) for Korea, Office of the Controller, Seoul, Korea, 4 February 1957, p. 1.

[2] *Loc. cit.*

with this Representative, matters relating to requirements, procurement, allocation, distribution, pricing, and accounting for supplies obtained under the aid agreements. At the present time the Office of Supply of the Ministry of Reconstruction has the primary responsibility for discharging these obligations.[3]

The Combined Economic Board (CEB) is the principal means of consultation between representatives of the two governments. The Over-all Requirements Committee of CEB is responsible for the preparation of a requirement program. When approved by CEB, this program becomes the basis for the issuance of procurement documents to be submitted to ICA Washington. After approval by ICA Washington, implementing documents are issued, authorizing the use of budgeted aid dollars.[4]

The procurement of aid goods, according to established procedure, may be carried out either by the Bank of Korea or by the government of the Republic of Korea through the Office of Supply of the Ministry of Reconstruction.

The local currency (Hwan) collected from the sale of foreign aid dollars is deposited at the Bank of Korea in a Counterpart Fund, and is used by the Korean government to finance domestic industrial development, partly by means of loans to private entrepreneurs, and to support the military budget.[5] Withdrawals from this account are controlled by detailed regulations, and are subject to review by the United States.

The United States' programmed assistance to the Republic of Korea under the supervision of the International Cooperation Administration amounted to about $332.3 million during fiscal year 1957.[6] The Defense Support portion of the program allocated $110.8 million to the development of specific projects (Project Assistance) and $216 million to the procurement of selected resources and commodities (Non-Project Assistance); under the Technical Cooperation portion of the program $5.5 million were allocated to foster the international exchange of technical knowledge and skill. These allocations do not include direct military aid to the Korean armed forces and off-shore procurement programs for either American or Korean military use.

The types of procurement fall broadly into two major classes. *Specified end user* (Technical Cooperation, Project Assistance, and portions of Non-Project Assistance): the dollars are originally allocated to specific recipients for specific purposes, as to a designated textile firm for the purchase of selected textile machinery, to a given producer or producers' association for the purchase of specified raw materials, or to a specific public project for the purchase of certain materials and equipment. The dollars are all sold at an exchange rate of 500:1.

Non-specified end user (portions of Non-Project Assistance): the dollars are

[3] *Loc. cit.*

[4] *Loc. cit.*

[5] *Organization-Problems-Programs*, information pamphlet issued by the UNC/OEC for Korea, Seoul, Korea, 1 January 1957, p. 23.

[6] This and all subsequent dollar figures quoted in the article, unless otherwise specified, were extracted from the *Program Status Report*, Fiscal Years 1954–1957, June 1957, International Cooperation Administration (ICA), UNC/OEC for Korea, Seoul, Korea, 31 July 1957.

originally allocated for specific purposes, as $10 million for the purchase of synthetic yarn or $12.4 million for the purchase of barley. The dollars in each allocation are sold at a uniform price of 500:1 to the applicants who bid the highest deposit computed as a percentage of the local currency cost of the dollars applied for. Buyers use these dollars to import the commodities specified, which they may then sell in the open market or dispose of in any way they see fit.

The non-specified end user type of procurement is the most useful to analyze because it is typical of the general situation and because deviations from a free market behavior may be more easily detected. By July 1, 1957, this aid category involved about $122.5 million, a substantial segment of the fiscal year 1957 program.[7] The following is a brief description of the procedure used to control the expenditure of non-specified end user funds allocated through the Bank of Korea.[8]

(1) The United States and the Republic of Korea agree that a specified quantity of dollars will be employed to procure a specified commodity.

(2) At the proper time the Bank of Korea publicizes the terms of purchase of these dollars.

(3) Prospective importers submit to the Bank of Korea such forms as may be required plus a certified check covering the down payment they offer. The minimum down payment acceptable is 20 per cent of the total Hwan cost of the dollars requested, computed at the legal exchange rate of 500:1. Higher bids must be in increments of 10 per cent of the total Hwan cost of the dollars.[9] Normally the minimum amount of dollars that may be requested by one importer is $2,000; the maximum is 25 per cent of the total amount of dollars offered.

(4) Allocations are granted first to those applicants who fall in the highest deposit category, and then to those in progressively lower categories until the funds are exhausted. If funds are insufficient to grant allocations to all applicants within a deposit category, a drawing is held.[10]

[7] *Program Status Report, op. cit.*, pp. 77–81.

[8] *Report on Procedures, op. cit.*, pp. 3–16. The summary given in the text is correct as of August 29, 1957, when it was checked and revised by Adams and Elmendorf of the Office of the Controller, UNC/OEC for Korea.

[9] Assuming that bids are being accepted on $860,000 allocated to raw rubber imports, an importer wishing to acquire $5,000 for this purpose could submit a minimum down payment bid of Hwan 500,000. The next higher bid he could make would be Hwan 750,000, the next Hwan 1,000,000, and so on, in Hwan 250,000 increments, up to the maximum bid of Hwan 2,500,000 which would be equal to the total purchase cost of $5,000.

[10] Assume that, given an offer of $860,000, deposits of 100 per cent of the total Hwan cost cover $300,000, deposits of 90 per cent cover $400,000, and deposits of 80 per cent cover $200,000. The importers who tendered bids of 100 per cent and of 90 per cent would receive the dollars they applied for. The remaining $160,000 would be allocated among the importers who submitted bids of 80 per cent: the serial numbers of their applications would be stamped on disks which would be put into a box and drawn out at random until the $160,000 had been exhausted. The bids which had not been drawn and all bids of 70 per cent or less would be rejected.

If the amount of dollars requested with deposits of 100 per cent exceeded the $860,000

(5) A successful bidder may apply to the Bank of Korea for a sub-authorization (S/A) as soon as his bid is accepted (or 30 days thereafter if the bid is in excess of $5,000). The S/A form contains the description of the commodity to be purchased, the unit price, the supplier, the delivery conditions, and other required data. The unit price normally must be the lowest world-wide quotation c.i.f. Korea available on this commodity on these delivery terms.[11]

(6) When the S/A application is submitted, an importer who had deposited 50 per cent or less of the purchase cost of the dollars must bring his deposit up to 60 per cent. An applicant who had deposited 70 per cent or more must bring his deposit up to 100 per cent; if he had deposited 60 per cent he is not affected. In addition, importers now have to buy National Bonds at the rate of Hwan 30 per dollar purchased.[12]

(7) Within ten days after his S/A has been approved, an importer must apply to the Bank of Korea for an import Letter of Credit.

(8) Fourteen days after the estimated arrival date of the goods importers must pay the balance, if any, owed on the purchase cost of the dollars.

(9) When the goods arrive importers must pay the pertinent duties, fees, and taxes; they must also buy more National Bonds to equal 25 per cent of the custom duty paid. Importers may then dispose of the goods as they see fit.

II

The method of allocation just described has the following possible consequences:

(1) The budgeted dollar balances may not be completely utilized. Goods are procured at the lowest available world-wide price, but, unless importers are willing to meet the minimum Hwan price of the dollar, a part or all of the dollars offered in any one given allocation may not be sold. (Note D_2 in Figure 1.)

(2) Hwan collections may not be maximized. The 500:1 fixed exchange rate prevents importers from fully expressing their desire for dollars through price bids. Although the importers' willingness to bid is derived from the prices at which they expect to sell the commodities, the actual bids are in fact limited by:

(a) The maximum down payment ceiling. As a result windfall profits are possible, profits which are over and above the returns necessary to induce traders to perform the import function. These profits measure the loss in revenue sustained by the Republic of Korea. (Note D_4 in Figure 1.)

(b) The minimum down payment floor. If an allocation is not wholly subscribed,

offered, the random process described above would be used to allot the entire allocation among the bidders in this deposit category. All bids of 90 per cent or less would be rejected automatically.

[11] The International Cooperation Administration usually places a ceiling on acceptable price quotations. The ceiling is set slightly above the world market price of the commodity, and S/As quoting a purchase price higher than the ceiling are not approved. If in practice the commodity cannot be procured at prices below the ceiling, the latter will be raised after a suitable investigation. The purpose of the ceiling is probably to minimize the possibility that buyers accumulate dollar balances abroad through collusion with the sellers.

[12] As of 29 August 1957 the average resale value of such bonds was about 20 per cent of their face value.

the revenue lost or gained by the Korean government is measured by the difference between the Hwan actually collected and the Hwan that could have been collected at a lower Hwan price of the dollar. (Note D_2 in Figure 1.)

Reference to Figure 1 will clarify the issues involved. Assume that two million newsprint dollars are offered for sale. No bids are accepted at a dollar price lower or higher than 500:1, while the entire allocation is offered at 500:1. The supply curve of newsprint dollars is therefore perfectly elastic at a price of 500:1 up to the maximum quantity supplied of $2 million. The market demand curve could pass through the end point (D_1), intersect the supply curve (D_2), lie to the right of it (D_4), or lie below it (D_3). The implications of each of these possibilities will be examined with the aid of four representative demand curves and of hypothetical numerical values.

If the market demand is D_1, then at an exchange rate of 500:1 the quantity demanded equals the maximum quantity supplied. The entire allocation is sold at the equilibrium price and Hwan 1 billion are collected.

If the market demand is D_2, then at an exchange rate of 500:1 only $1.5 million are sold and collections amount to Hwan 750 million. If these dollars were sold at a price of 400:1, the entire allocation would be utilized and collections would be Hwan 800 million. Under the assumption that the elasticity of D_2 over the relevant arc is greater than one, the 500:1 price results in foregoing $0.5 million worth of newsprint imports and in a loss in collections of Hwan 50 million.

If the market demand is D_3, then at an exchange rate of 500:1 no dollars are sold and no Hwan are collected. If these dollars were sold at a price of 100:1, the entire allocation would be utilized and collections would be Hwan 200 million. The 500:1 price in this case results in foregoing $2 million worth of newsprint imports and in a loss in collections of Hwan 200 million.

If the market demand is D_4, then at an exchange rate of 500:1 the $2 million are allocated by lot among applicants wishing to buy $3 million, and collections amount to Hwan 1 billion. If these dollars were sold at a rate of 700:1, the entire allocation would still be utilized and collections would be Hwan 1.4 billion. The

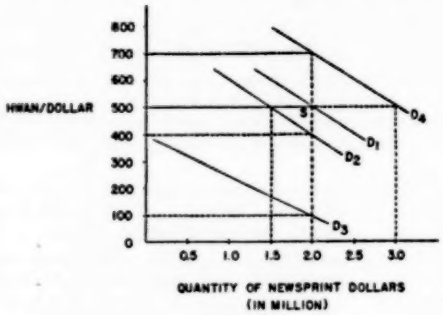

FIG. 1

500:1 price in this case results in a loss in collections of Hwan 400 million, which are reaped as windfall profits by the buyers selected.

An examination of the sixty allocations offered for sale through the Bank of Korea under the fiscal year 1957 program in March and April 1957 shows that in thirty-six cases the amount importers applied for exceeded the amount offered, in eleven the reverse was the case, in eight the amounts were equal, and in five no bids at all were submitted. In fifteen cases all bids submitted were of 100 per cent of the total cost: $78,397,585 were applied for against $8,228,731 offered. One offer of $140,000 for zinc ingots imports evoked applications for $4,201,612—and this was not one of the fifteen 100 per cent bids.[13]

Commodity allocations in March 1957 were further analyzed to estimate the size, if any, of the windfall profits accruing to importers. All of the commodities for which the data required for computation were available yielded evidence of such profits: 9 per cent on raw cotton, 17 per cent on rayon yarn, 43 per cent on newsprint, 44 per cent on beef tallow, 59 per cent on wheat, and 153 per cent on barley (profits are expressed as a percentage of the dollar purchase cost).[14] The variations in the windfall profit rates are a function of the dollars offered for sale in each category and of the domestic demand for the commodities involved, given the commodities' world market prices.

The existence of windfall profits was not surprising. In March 1957, aid dollars were sold at the official rate of 500:1,[15] while in the black market export

[13] The data in this paragraph were furnished to the author by the ICA section of the Bank of Korea.

[14] Windfall profit estimates were computed by taking the Seoul wholesale price and by subtracting from it the purchase cost (the c.i.f. dollar price Korea times 500), the various duties and taxes, the loss on interest, the loss on the compulsory purchases of government bonds, and the other costs of operation. The commodities used were *all* those for which a c.i.f. dollar price and a Seoul wholesale price were available for March 1957. The Seoul wholesale prices were extracted from the *Monthly Statistical Review*, Bank of Korea, Seoul, Korea, March 1957; all the other necessary data were obtained directly from the Ministry of Finance of the Republic of Korea and from the non-classified files of the UNC/OEC for Korea. These estimates were supported by the records of transactions handled by three Korean importers.

[15] The actual price paid by importers will exceed the official exchange rate by the amount of the interest they pay or forego on the down payment they deposit. Since the rate of interest on a moderate-risk loan of Hwan 1 million is about 8 per cent per month (September 1, 1957; the interest rate was about 10 per cent in March 1957), the size of the deposit represents a significant cost and may explain why importers will not always deposit a down payment bid equal to the total purchase cost of the dollars they wish to obtain.

For example, assume that one month elapses from the time an importer makes the original down payment to the time he brings it up to 60 per cent of the total cost of the dollars he applied for, and that one month afterwards he deposits the balance owed. Then the minimum rate per dollar would be Hwan 500 plus the 8 per cent interest paid or foregone on the Hwan 100 on deposit during the first month (Hwan 8) and on the Hwan 300 on deposit during the second month (Hwan 24), or a total of 532:1. The maximum rate per dollar would be Hwan 500 plus the 8 per cent interest paid or foregone on the Hwan 500 on deposit during the two months (Hwan 80), or a total of 580:1. The actual rate is further affected by losses on forced purchases of National Bonds (about Hwan 40 per dollar), good-will contributions, and other factors.

dollars sold for 1,150:1, United States currency for 1030:1, and Military Payment Certificates for 850:1.

Foreign aid effects the transfer of resources to selected nations presumably unable or unwilling to procure such resources through the present or future exchange of domestically produced goods and services—that is, unable or unwilling to pay for them. Waste is therefore inherent to any aid program, since aid dollars are not allocated in response to world market bids. If the United States chooses to effect such transfers to Korea, however, standards of efficiency applicable to the local situation must be developed to limit the extent of the waste.

Given the total size of the aid program to Korea, the efficient use of these funds requires:

(1) Complete utilization of budgeted dollar balances. Unused dollars, whether re-offered for sale months later or permanently returned to the United States Treasury, represent resources that are foregone at least temporarily. Since the aid program implies such resources are necessary to meet certain present objectives, unused dollar balances are evidences of waste.

(2) The maximization of local currency collections, subject to the restraint that all dollars be sold.

The Hwan collected through the sale of foreign aid dollars are a major source of government revenue (50 per cent of the total revenue received during the first nine months of 1956).[16] These funds are used to support industrial development and the military establishment, two major objects of government expenditure. Past experience requires the assumption that the level of these expenditures is determined independently from the level of the revenue obtained from the sale of the aid dollars, and that the gap between the two is financed mainly through increases in the money supply.

Increased local currency collections would thus exert anti-inflationary pressure on the domestic economy by dampening the size of the net additions to the money supply,[17] as well as facilitate the release of domestic resources to the government by decreasing the quantity of money in the hands of the private sector.

Maximization of local currency collections must be considered a criterion of efficiency because stemming the inflation is a major policy objective of the United States.[18]

Two additional standards, already incorporated in the present allocation mechanism, must be noted:

(3) World wide procurement of aid goods at the lowest available unit price c.i.f. Korea. To purchase goods at prices higher than their lowest market quotation means that some resources are foregone, and therefore waste occurs.

(4) The optimum distribution of these imports within the economy. If a

[16] Cf. Arthur I. Bloomfield, *Report on Monetary Policy and Banking in Korea*, UNC/OEC for Korea, Seoul, Korea, 30 November 1956, p. 10.

[17] *Loc. cit.*

[18] *Organization-Problems-Programs*, *op. cit.*, p. 16.

given quantity of goods (equipment, raw materials, and finished products) is to be distributed among alternative users and uses, the problem is clearly one of rationing.

The optimum distribution of factors of production requires their most efficient employment, which implies maximization of output. Resources should therefore be directed into those uses where their value productivity is greatest as reflected in the market place.

The optimum distribution of consumer goods means maximization of consumer satisfaction. Since interpersonal utility cannot be measured, a solution should be sought in the market place.

The free price system is adopted as the allocative criterion because it allows producers and consumers to maximize their production and satisfaction by allocating income among the alternative factors and commodities avilable to them.

III

The analysis up to this point has been confined to the non-specified end user type of procurement. The specified end user classification now needs to be briefly considered.

The objective of the specified end user method of allocation is to make specific types of goods available to specific types of users to meet certain general policy requirements. Central decisions as to who receives what are thus entailed. In the nature of the case it is impossible to simulate a market distribution system such that the arbitrarily selected users obtain goods at a price equal to their demand price, and waste is therefore likely to occur.

Dollars in this category may be allocated to private buyers, to nationalized industries, or to government agencies for welfare programs.

Private buyers may be chosen on the basis of various factors.[19] For instance, machinery and equipment may be allocated to applicants who have the capital and technical knowledge required to establish and operate a given plant. Or raw materials may be allocated to specific applicants engaged in the production of commodities considered essential by the planners. The windfall profits that these importers may reap from the purchase of the low-priced aid dollars would be incorporated into the revenue accrued from the sale of the final product, and are therefore difficult to isolate. Such exchange rate profits clearly originate from the lack of open bidding on the dollar allocations and reduce the Hwan collected by the Korean government. Furthermore, when users are selected on any basis other than their willingness to pay a market price, collusions and delays are possible, compounding the likelihood of waste and inefficiency.

Dollars may be sold to nationalized industries for specific projects, as for the repair or construction of power plants, the development of coal mines, or the procurement of coal for the railroads.[20] Since no open bidding occurs, it is impossible to determine how much the private sector, or another government enterprise or unit, would have been willing to pay for these dollars. Lacking a

[19] *Ibid.*, pp. 19, 23.
[20] *Ibid.*, pp. 19–21.

free market standard of comparison, windfall profits could be significant and yet difficult to estimate. The considerations involved are actually identical to those affecting the private buyers, the only difference being that firms are owned by the government rather than by the private sector.

Agencies of the Korean government also purchase dollars for welfare expenditures, as in the case of education, agriculture, and health programs.[21] The problem of waste in this particular type of expense is the same problem that all governments face when they determine the level and distribution of domestic welfare outlays and is not unique to the aid program.

In the case of specified end user allocations waste would exist if a higher Hwan price of the dollar could have been obtained from an alternative user for the same use.

IV

Three major alternative methods of aid administration are possible. First, the present system of allocating dollars arbitrarily to specific expenditures. The allocation of $19.4 million to the importation of wheat or of $3 million to the importation of equipment for a pig iron plant, in so far as they fail to reflect the existing market conditions for these items, is clearly inconsistent with the standards of efficiency specified earlier. The objectives desired would be secured, but at the cost of gross waste.

Second, a purely free market method of allocation. Assuming that the United States has determined the size of the aid program to Korea, the market might be allowed to resolve the equilibrium price of the aid dollars; at that price anyone would be permitted to buy any quantity of dollars for the import of any commodity in any quantity. The objectives desired would probably not be achieved, but waste should be insignificant.

Third, the allocation of dollars according to well defined standards of efficiency to insure that all the objectives chosen are realized with a minimum of waste.

A realistic approach to a more efficient aid administration based on the analysis developed earlier suggests that the present system of aid allocation should be modified as follows:

(1) Consumption Expenditures. Dollars allocated for this purpose should be sold in the open market at their equilibrium price.

A list of consumer commodities eligible for import could be drafted; however, it should cover a wide range of goods, and no further restrictions would be permissible. Importers should be allowed to spend the entire allocation on one commodity if they so desired.

(2) Investment Expenditures. The United States and the Republic of Korea should select the specific projects to be sponsored on the basis of the social marginal productivity criterion. All the equipment and machinery eligible for import should be listed by project.

[21] *Ibid.*, pp. 21, 22.

To insure the prompt and full utilization of the dollars allocated, the list of projects should be extensive, and it should exceed in total dollar value the size of the investment allocation. Projects would then be sold to the highest bidders until that year's allocation is exhausted. That is, assuming that investment expenditures for fiscal year 1958 total $100 million, and that twenty five separate projects worth $10 million each are eligible, then the ten projects receiving the highest bids would be sold. Thus the market would be allowed some choice, and waste would be minimized.

Alternative methods of allocating investment dollars are available, but they all reduce themselves to bilateral bargaining between the dollar-managing agency and the buyer. Such methods would not only be conducive to collusion, but would offer the same disadvantages as the system now in force.

The method recommended assumes that the demand conditions for the imported commodities will not be affected by modifications in the procurement procedures, and that the Korean government will be successful in preventing collusion among bidders.

At the present time political influence and bedroom diplomacy conceivably play a role in the dollar allocation mechanism. Entrepreneurs with the capital and the skill to operate a plant may not have the capital and the skill to navigate the channels of bureaucracy. The institutional reorganization suggested in this paper would limit administrative rule to broad decisions and would discourage inequality in income distribution arising from exchange rate profits on aid dollar purchases. If some concentration of wealth were sought as a source of investment capital, a process more consonant with the aims of the aid program should be devised.

The Korean government and its agencies should buy whatever dollars they want in competition with the private sector. The Republic of Korea must become aware of the extent to which it is subsidizing its various projects, and budget its expenditures with some relation to actual market conditions. A more efficient allocation of resources would result.

This system of aid administration minimizes waste, since dollars are allocated in conformity with the free price system within the constraints given. It might be noted that the pertinent problem regarding any aid program is not the existence of waste measure by world market standards, but whether the level of waste is justified by the ends sought.

It will no doubt be objected that a strict observance of the proposed criteria might in some instances conflict with what were felt to be important public objectives. Within limits, this could be a valid criticism. In such instances, however, it would contribute to efficiency to have the criteria in force. Any permissible administrative departure from them would have to be justified on explicit grounds of public welfare.

The officials responsible for the administration of the aid program in Korea are aware of the existing problems of allocation, and recognize the presence of some waste. Unfortunately their preoccupation with political and administrative matters has resulted in the undue neglect of economic considerations.

TEN YEARS OF GATT

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In the approximately ten years which have passed since the General Agreement on Tariffs and Trade (GATT) entered into force, a useful record of the work of the Contracting Parties has been accumulated.[1] This paper is concerned with an explanation of the provisional nature of the GATT, with an analysis of the current revised version of the GATT as a codification of the United States policy of *freer* international trade, and with an evaluation of the GATT as an instrument of commercial policy on the basis of experience with it during these ten years. Specifically, this paper concludes that the real importance of the GATT lies as much in the fact that it provides an international forum within which differences of opinion and policy in international trade matters can be peaceably discussed and settled and within which past tariff reductions can be safeguarded, as in any further tariff reductions which might be achieved under it.

On June 30, 1948 the United States and eleven other countries had put the GATT provisionally into force,[2] and by the end of 1956 thirty-five countries were listed as Contracting Parties.[3] In addition, procedures looking towards the accession of Switzerland were the subject of a Working Party Report in 1956.[4] In the case of Japan, however, fourteen countries had invoked Article XXV, which relates to the nonapplication of the Agreement between particular Contracting Parties,[5] and even earlier, in September 1951, without relying on

[1] This record is mainly to be found in the following works all published by the Contracting Parties to the General Agreement on Tariffs and Trade in Geneva on the dates indicated: *Basic Instruments and Selected Documents* (BISD) *Volume I* (1952); *Volume I (Revised)* (1955); *Volume II* (1952); *First Supplement* (1953); *Second Supplement* (1954); *Third Supplement* (1955); *Fourth Supplement* (1956); *Fifth Supplement* (1957); *The Attack on Trade Barriers* (1949); *Liberating World Trade* (1950); *GATT in Action* (1952); *International Trade, 1952* (1953); *International Trade, 1953* (1954); *International Trade, 1955* (1956); *International Trade, 1956* (1957); and *International Trade News Bulletin* (monthly).

[2] *BISD*. I, 127. Brown, *Restoration of World Trade*, p. 235, and Clair Wilcox, *A Charter for World Trade*, New York, 1949, p. 72, give the number as nine on this date. I have taken the number of twelve from the "List of Protocols which are in Force," in the reference indicated. The countries whose date of application of the *Protocol of Provisional Application* is prior to June 30, 1948, are: Australia, Belgium, Canada, China, Cuba, Chechoslovakia, France, Luxenbourg, the Netherlands, the Union of South Africa, the United Kingdom, and the United States.

[3] Australia, Austria, Belgium, Brazil, Burma, Canada, Ceylon, Chile, Cuba, Czechoslovakia, Denmark, Dominican Republic, Finland, France, Germany, Greece, Haiti, Indonesia, Italy, Japan, Luxembourg, Netherlands, India, New Zealand, Nicaragua, Norway, Pakistan, Peru, Rhodesia and Nyasaland, Sweden, Turkey, Union of South Africa, United Kingdom, United States, and Uruguay.

[4] The report is reproduced in *BISD, Fifth Supplement*, p. 40ff.

[5] *International Trade News Bulletin*, Oct. 1956, IV, p. 534.

any particular provision of the Agreement, the Contracting Parties had declared that the United States and Czechoslovakia should be free to suspend their GATT obligations with respect to each other only.[6] With these qualifications, the GATT currently serves as a basis for regulating international trade relation among these thirty-five countries.

I. PLAN OF THE GATT AND ITS LEGAL EFFECT

The principle substantive provisions of the GATT as revised in 1955 will be described briefly later. As of June 1957 the protocols embodying the amendments of 1955 had not yet come into force.[7] However, nineteen countries have already accepted them, and there seems little doubt that these protocols will eventually become a part of the Agreement.[8]

The revised GATT (as did the original GATT) consists of three principal parts. Part I contains three articles dealing respectively with "objectives," "general-most-favored-nation treatment," and "schedules of tariff concessions." By 1954 Part II had come to incorporate the substance of the trade policy chapter of the Havana Charter. The 1955 amendments were principally concerned with a revision of the exceptions to the general principle of Article XI of Part II that quantitative restrictions on imports are to be removed. Part III deals with administration of the General Agreement.

Both Parts I and III are applied unconditionally. Part II was, however, originally applied "provisionally." When the GATT was first negotiated there existed a problem of the relationship of the GATT to the Charter, which had not yet been finally drafted. Moreover, the United States delegation to the negotiating conference did not have authority under the Trade Agreements Act to agree to the inclusion in the GATT of any provisions requiring additional legislation to implement them, nor could it agree to the inclusion of any provisions which might be held by the courts to be outside the scope of the authority delegated to the President by the act. For this reason Part II of the GATT was put into effect under the *Protocol of Provisional Application,* which provided for its application only "to the fullest extent not inconsistent with existing legislation."[9]

Constitutionality of the GATT has never been decided by the courts (nor does

[6] *BISD,* II, p. 36.

[7] The Contracting Parties to the General Agreement on Tariffs and Trade: *Final Act of the Ninth Session of the Contracting Parties to the General Agreement on Tariffs and Trade* Geneva, 1955 (mimeographed); *Protocol of Organizational Amendments to the General Agreement on Tariffs and Trade,* Geneva, 1955 (mimeographed); *Protocol Amending Part I and Articles XXIX and XXX of the General Agreement on Tariffs and Trade,* Geneva, 1955 (mimeographed); *Protocol Amending the Preamble and Parts II and III of the General Agreement on Tariffs and Trade,* Geneva, 1955 (mimeographed); and *Agreement on the Organization for Trade Cooperation,* Geneva, 1955 (mimeographed). See also U. S. Department of State: *General Agreement on Tariffs and Trade, Present Rules and Proposed Revisions,* Washington, 1955; and *GATT, an explanation of its provisions and proposed amendments,* Publication 5813, Commercial Policy Series 147, Washington, 1955.

[8] Letter from Information Officer, GATT, Geneva, to writer, June 7, 1957.

[9] See *BISD,* I, p. 77.

it seem likely to be); and the perennial argument about renewal of the Trade Agreements Act involves as much the political question of the distribution of power between the executive and legislative branches of the government as it does the question of injury to domestic producers. It is interesting to note, therefore, that one who supports the *GATT* only on the basis of conclusions drawn from an economic model, whether he admits it or not, is thereby also taking a position on the undecided legal question that the Trade Agreements Act does contain the kind of a delegation of power to the President which was necessary for the negotiation of Parts I and III of GATT. Since the matters covered in Part II are probably broader than this delegation contemplates, the *Protocol* is actually an attempt to cure this defect. For this reason economists interested in international economic policy ought also to be interested in the meaning of this protocol.

The *Protocol* is still in force. However, on March 7, 1955 the Contracting Parties unanimously resolved that a definitive acceptance of the Agreement would be valid even if accompanied by a reservation under which Part II would be applied as it was then being applied under the *Protocol*.[10] Such a conditional-definitive acceptance of Part II would seem to differ only nominally from its present application.[11]

II. THE SUBSTANTIVE PROVISIONS OF THE GATT AS REVISED IN 1955

It would take one too far afield to discuss all the clauses of the GATT or to reconcile them with the original versions of these provisions or with their predecessors in the Havana Charter. It will suffice merely to describe briefly the theory of the GATT as contained in its (now) four key affirmative clauses, Articles II, III, XXIX, and XI. Most writers have tended to emphasize only the first provision.

Article II of the 1955 GATT (Art. I of the original) provides for general-most-favored nation treatment, subject to minor exceptions, of which the principal one relates to preferences allowed in a number of historic agreements (for example, the British Empire preference system). Article III (as was the case of original Article II) makes the tariff concessions attached to it an integral

[10] *BISD, Third Supplement*, p. 48. Compare, U. S. Department of State, *General Agreement on Tariffs and Trade, Present Rules and Proposed Revisions*, p. i.

[11] There are presumably two other ways in which the GATT could be applied definitively by the United States. The first way would be for the Congress to repeal all domestic legislation inconsistent with the GATT. It could then become a treaty or be applied definitively as an executive agreement. In view of our existing agricultural policy, it is clear that this is not going to happen. The second way would be for the Contracting Parties to grant waivers to any country having legislation inconsistent with the GATT to cover such legislation. This explains the waiver given to the United States to cover Section 22 of the Agricultural Adjustment Act. See *BISD, Third Supplement*, p. 32ff. Definitive application of the Agreement by this route raises interesting but obvious questions concerning the effect of such waivers on the substance of the Agreement itself, and these require no further elaboration.

part of the Agreement. These concessions are not, as is popularly supposed, generalized under the most-favored-nation clause in Article II. They are established as a matter of independent contractual right under Article III.

Also concerned with tariff matters are Article XIX, which contains an escape clause provision modeled after the escape clause in the Trade Agreements Act, and Article XXIX, which now merely permits the Contracting Parties to sponsor multilateral tariff negotiations. The article originally dealt with the relation of the GATT and the Charter. All of the old language has been deleted in the revision. The new language, while affirmative, seems merely to formalize the prior procedure under which such multilateral tariff negotiations are held. Purpose of the new provision has apparently been to provide the proposed Organization for Trade Cooperation with such authority if it should come into existence.

Article XI, the general obligation requiring countries to eliminate quantitative restrictions, is the final key affirmative clause of the GATT. It is subject to exceptions to be considered below. In turn, Article XI is modified by Article XIII, which provides that any restrictions applied under such exceptions must be applied in a nondiscriminatory way. Both are substantially similar in the revised GATT to their original texts.

It is clear that the theory of the GATT as stated in these key provisions has not been changed by the 1955 revisions. That theory is that tariff negotiations are to be held, reductions are to be safeguarded, and quantitative restrictions are to be abolished. Overriding the theory is the conception of general-most-favored nation treatment as the basic international policy. But though the statement of this theory has not been changed by the revisions, the principal exceptions to Article XI have been substantially amended.

It is, therefore, necessary *first* to examine these new exceptions to determine how far the original GATT philosophy may now have been compromised. But *it is a shallow* and a *purely legalistic view—although sometimes voiced by critics* of these revisions—*to argue that a mere change in the language of these exceptions* necessarily *constitutes such a change* in philosophy. The important question is: how are these exceptions likely to be interpreted? To provide an answer to this question it will be necessary later to examine in detail the actual past operations of the Contracting Parties with regard to the predecessors of these exceptions.

Aside from the exceptions relating to national security measures and to the maintenance of peace and security under the United Nations, the principal exceptions in the GATT are those relating to commodity agreements, to quota restrictions imposed on balance of payments grounds, and to trade barriers imposed on grounds of "economic development."

There was and is no provision of the GATT which is equivalent to Chapter VI ("Intergovernmental Commodity Agreements") of the Havana Charter. However, Paragraph I (h) of Article XX of the original GATT provided indirectly for an exception in the case of commodity agreements drawn up in ac-

cordance with Chapter VI.[12] In the revised GATT this provision is continued in an Interpretative Note, and in addition, the paragraph is revised to except any such agreement which "conforms to criteria submitted" to the Contracting Parties and not disapproved by them, or "which is itself so submitted and not so disapproved."

Both the balance of payments exception (Article XII) and the exception to cover cases of economic development (Article XVIII) of the original GATT were extensively revised in 1955. Revised Article XII (Restrictions to Safeguard the Balance of Payments) contains a recognition by the Contracting Parties that a country "may experience a high level of demand for imports" as a result of its domestic policies "directed toward the achievement or maintenance of full and productive employment and the development of economic resources." The Contracting Parties further recognize that such a high level of demand may give rise to a threat to a country's monetary reserves, and, accordingly, a country is permitted to continue in effect restrictions imposed on these grounds. In addition, the article establishes the right of a Contracting Party applying restrictions under its terms to use controls to "give priority to the importation of commodities which it considers more essential (e.g., wheat rather than expensive autos)."[13]

Article XIV (Exceptions to the Rule of Non-discrimination) has also been changed in the revised GATT from its predecessor. This provision allows a Contracting Party to depart from the rule of non-discriminatory application of quota restrictions applied pursuant to one of the exceptions to the general rule laid down in Article XI, so long as such discrimination is consistent with the Articles of Agreement of the International Monetary Fund, or with similar provisions of a special exchange agreement negotiated pursuant to the GATT itself.[14]

As noted above, Article XVIII, relating to exceptions on grounds of economic development to the general rule prohibiting quantitative restrictions, has also been substantially changed in the revised GATT. The new article contains "recognition" by the Contracting Parties that the development of the economies of Contracting Parties "which can only support low standards of living and are in the early stages of development" will further the objectives of the GATT. Accordingly, exceptions to the other provisions of the Agreement are rationalized "to facilitate the attainment of the objectives" of the Agreement.

Under these exceptions underdeveloped countries are permitted to "enjoy special facilities" in the form of "flexibility in their tariff structure" and to "apply quantitative restrictions for balance of payments purposes in a manner"

[12] The GATT provision allows an exception to commodity agreements which conform to the principles laid down in an ECOSOC Resolution of March 28, 1947. The resolution in turn adopts Chapter VI of the Charter as a statement of guiding principles. Thus one might argue that Chapter VI has been incorporated by reference into the GATT.

[13] U. S. Dept. of State, *The General Agreement on Tariffs and Trade, An explanation of its provisions and proposed amendments*, p. 11.

[14] *U. S. Dept. of State, General Agreement on Tariffs and Trade, Present Rules and Proposed Revisions*, p. 27.

taking "full account of the continued high level of demand for imports likely to be generated by their programmes of economic development."

Under Paragraph 4 (a) of Article XVIII, underdeveloped countries whose economies "can only support low standards of living" and which are "in the early stages of development" are *"free to deviate temporarily"* from other provisions of the GATT [italics mine]. Under Paragraph 4 (b) other underdeveloped countries (apparently those in more advanced stages of economic development whose standards of living are higher) *may apply for approval* to employ such restrictive measures in the interest of a specific economic development measure.

Two possibilities are covered in the revision. Where the new restriction affects an article with respect to which a concession has been negotiated with another Contracting Party, consent of that Party to the imposition of the restriction is not required, although consulation in good faith to determine adequate compensation is necessary. If the two negotiating countries do not come to an agreement concerning the modification or withdrawal of the concession, the matter is referred to the Contracting Parties.

If the Contracting Parties find the compensation offered is adequate, the (underdeveloped) country proposing to modify or withdraw concessions granted (i.e., to impose restrictions) under the Agreement may proceed to do so. If the Contracting Parties find that the compensation offered is not adequate, but that the country offering it "has made every reasonable effort to offer adequate compensation," that country is still free to impose the restriction. Any other Contracting Party affected by this action is then free to withdraw or modify substantially equivalent concessions initially negotiated with the underdeveloped country. The procedure is thus one of bargaining in reverse.

Where the proposed new restriction affects an item with respect to which no concessions have been made in the Agreement, consultation is required, but if within 90 days after notification of the proposed measure the Contracting Parties have not concurred in the measure, the underdeveloped country may introduce the measure proposed after informing the Contracting Parties.

Under these circumstances, it is clear that certain "underdeveloped countries," as defined in the Agreement, are now apparently much freer than they formerly were to impose quantitative restrictions as a result of balance of payment difficulties arising out of their economic development programs; and that apparently they are completely free to use tariff measures for protection on grounds of economic development, subject to a loss of equivalent concessions if the item affected happens to be one with respect to which they have previously granted a concession.

III. OPERATIONS UNDER GATT SINCE 1947

The four tariff negotiations conducted under GATT auspices have resulted in reductions or bindings on approximately 60,000 items. Of the 3,000 United States items included in the total, approximately 60 percent have been bindings

of a duty free status.[15] The total value of United States exports and imports involved in these concessions has been estimated to amount to about seven billion dollars each.[16] In 1955 the total world trade in products covered by GATT concessions was estimated to amount to more than forty billion dollars.[17] It has also been asserted that a five percent reduction has been achieved in the average margin of preferences enjoyed by British goods in Commonwealth countries "due in a significant degree to the GATT negotiations at Geneva in 1947," and other reductions in preferences have also been accomplished under the GATT.[18]

These general statements provide an overall indication of the scope and nature of the *tariff reductions* negotiated by the Contracting Parties under the GATT. However, they throw little or no light on the actual nature of the GATT nor on operations of the Contracting Parties under it. Indeed, such general statements tend to obscure the fact that the GATT is today much more than a mere device for bringing about tariff reductions, important as that function may once have been. For a complete understanding of the GATT one must examine the operations of the Contracting Parties and the ways in which they have applied the rules to which they have agreed to adhere.

By January 1957, seven waivers had been granted to permit the introduction or continuation of practices inconsistent with Article II (General-Most-Favored-Nation Treatment). In general, these exceptions have allowed the establishment of preferential tariff rates by countries receiving such waivers. At the same time, an attempt has been made to review operations under such waivers and to safeguard the rights of other Contracting Parties in the event that the establishment of such preferences would result in the modification or withdrawal of concessions already granted. In general, the waivers have been granted in cases where there have been strong political reasons for taking such action (e.g., in the case of the European Coal and Steel Community waiver). At the same time, the waivers granted to the two principal GATT countries, the United States and the United Kingdom, have been made conditional.[19]

Among the actions which have arisen under Article III (Schedules of Concessions), the two most serious seem to involve the adoption of a new customs tariff by Brazil and the imposition of a temporary compensation tax by France.[20] Neither has been so far brought to a satisfactory solution. Brazil has offered as a defense that the new tariff would aid in the "solution of an acute internal fiscal problem" and sent its Minister of Finance to the plenary meetings of the Con-

[15] U. S. Congress, House, Committee on Ways and Means, *The Agreement on the Organization for Trade Cooperation, House Report No. 2007*, 84th Congress, 2d. Session, Washington, 1956; and *Organization for Trade Cooperation, Hearings on H. R. 5550*, March 1–16, 1956, Washington, 1956, *Hearings*, p. 56.

[16] *Ibid.*

[17] U. S. Congress, House Ways and Means Committee, *House Report 2007*, 84th Congress, p. 149.

[18] U. S. Congress, House Ways and Means Committee, *Hearings on H. R. 5550*, p. 57–58.

[19] See (United States waiver) *BISD, II*, 9; and (United Kingdom waiver) *BISD Second Supplement*, p. 20, and *BISD Third Supplement*, p. 21.

[20] *BISD, Fifth Supplement*, p. 122 (Brazil), and p. 27 (France).

tracting Parties to explain the matter. A waiver subject to the rights of the other Contracting Parties was granted.[21]

France argued in 1955 that a compensation tax it had imposed was not for the purpose of protection but was a transitional device "designed to facilitate the removal of quantitative restrictions on imports into France" from other OEEC countries. The Contracting Parties have, however, found this reason to be insufficient to justify the action, in view of the fact that concessions granted have been impaired by the measure. Accordingly, the matter has been the subject of consideration at all sessions since the Ninth.[22]

In addition to the actions taken under the two preceding provisions, which are, of course, aplied unconditionally, various complaints have also been heard under provisions of the GATT which are applied only provisionally.

Interesting examples include an Italian complaint in 1955 under Article VI (the first under this provision) that Sweden had imposed antidumping duties against Italian stockings. The matter was referred to the GATT Panel on Complaints, which recommended that Sweden study the administration of the law.[23] Sweden thereafter abrogated the law in 1956. Another case, still pending, involves a French complaint that a Brazilian tax law of 1945 imposes discriminatory taxes on imports. Although the original law was covered by the *Protocol of Provisional Application*, the tax law had been amended after 1947. The question is thus raised of whether or not discriminatory taxes which were in existence prior to acceptance of the GATT by a country can be increased, or of whether they are bound at the levels existing on the date of acceptance by a country of the GATT. The French complaint has been on the agenda of the Contracting Parties at every session since 1949, and no decision has yet been reached.[24]

The granting of permission in every year since 1952 by the Contracting Parties to the Netherlands to impose quota restrictions against imports of United States wheat because of the United States imposition of restrictions on imports of dairy products under Section 104 of the Defense Production Act is a good example of the way in which the GATT permits bargaining in reverse.[25] Articles XI and XXIII were the basis of this action, and the United States, realistically enough, did not choose to rely on the security exception of Article XXI for a defense.

But the GATT provisions have a broader function than merely to serve as a basis for formal complaints through regular GATT channels and for formal action by the Contracting Parties. The United States has relied on GATT provisions in initiating bilateral consultation with other countries in order to secure removal of discriminatory trade restrictions. For example, the United States has

[21] *BISD, Fifth Supplement*, p. 36.

[22] *BISD, Third Supplement*, p. 26; *BISD, Fourth Supplement*, p. 20; *BISD, Fifth Supplement*, p. 27.

[23] *BISD, Third Supplement*, p. 81; p. 90.

[24] *BISD, Second Supplement*, p. 25; *BISD, Fourth Supplement*, p. 21; *BISD, Fifth Supplement*, 124, para. 9.

[25] *BISD, II*, p. 16; *BISD, First Supplement*, p. 31; *BISD, Second Supplement*, p. 28; *BISD, Third Supplement*, p. 46.

used Article XI to secure alteration of a Brazilian coffee export quota system which discriminated against the United States, and has relied on Article IV to secure modification of a United Kingdom tobacco mixing regulation. Other examples can also be cited.[26]

It is obvious that the general reduction in quota restrictions which has occurred since the end of World War II cannot be attributed to GATT alone. Improvements in the external financial situations of the countries concerned are a condition precedent to such liberalization. Article XI has, however, allowed countries to exert pressure for a speedier removal of such restrictions than might otherwise have been the case, especially where their purpose was purely protective, and in some cases the article has provided a basis for a compensatory withdrawal of concessions where an existing concession has been modified.

The exception in Article XX of the original GATT relating to commodity agreements conforming to Chapter VI of the Charter has not been the subject of any formal action by the Contracting Parties, probably because countries negotiating such agreements have attempted to conform to Chapter VI and no complaints have been made.[27] Various possibilities exist with respect to the establishment of the new criteria for testing such agreements provided for in the revision of Article XX.

The simplest solution would be a continued application of the principles laid down in Chapter VI. Alternatively, the Contracting Parties can develop and adopt their own criteria, or, finally, a collateral agreement containing such criteria can be negotiated and made a part of the General Agreement by means of a protocol to it or could constitute a new agreement.

A draft Special Agreement on Commodity Arrangements (SACA) was in fact drawn up by the Working Party on Commodity Problems in 1955. It was considered by the Contracting Parties at their Tenth Session, and plans were made for presentation of a final draft to the Eleventh Session.[28] The draft agreement has not been made public, but the Working Party reported to the Eleventh Session (1956) its conclusion "that, in the present circumstances, it was unlikely that agreement could be reached along the lines of SACA and that therefore an alternative approach should be explored."[29]

As a result of this report, a resolution was adopted by the Eleventh Session incorporating the views of the Working Party, calling for a review at every session of trends and developments in international commodity trade, and affirming the right of the Contracting Parties to call commodity conferences "having regard to the competence of the United Nations and of other intergovern-

[26] For these and others, see U. S. Congress, House Ways and Means Committee, *Hearings on H. R. 5550,* pp. 63–64.

[27] The International Tin Agreement of 1953 was negotiated pursuant to the provisions of Chapter VI. See U. N. ECOSOC, United Nations Tin Conference 1950 and 1953, *Summary of Proceedings,* 1954, II, D. 4, New York, 1954.

[28] U. N. ECOSOC, Commission on International Commodity Trade, *Recent Commodity Developments, Memorandum No. 5,* New York, 1955 (mimeographed).

[29] *BISD, Fifth Supplement,* p. 87.

mental organizations concerned. . ."[30] As might be expected, in view of the great attention which this question has received in the ECOSOC in recent years, the resolution emphasizes price instability as one of the difficulties facing countries trading in primary commodities.[31]

Under the revised GATT the restrictions for purposes of economic development which were permitted by the original text of Article XVIII (Governmental Assistance to Economic Development) had to be applied among countries in a nondiscriminatory way; and, in general, consulation with the Contracting Parties was required if a country imposed them.[32] In practice the Contracting Parties have adopted a procedure of granting *Releases* permitting the use of such restrictions for limited periods of time, ranging from one to six years. Table I summarizes the *Releases* issued by the Contracting Parties through January 1957.

This table shows that the provisions of Article XVIII have not been used extensively. Both the Haitian and Indian *Releases* can be eliminated from serious consideration: Table I makes clear that they were merely nominal. The Cuban *Release* was minor and affected two products. Only in the case of Ceylon have extensive exceptions from the Agreement been permitted on grounds of economic development. The fears concerning the harmful nature of this exception which some voiced rather loudly with respect to the equivalent provision in the Charter have not materialized during the first ten years of experience with the GATT.

The releases which have been issued do, however, present a pattern, and provide a basis for deducing the policy of the Contracting Parties in granting such releases. Their procedure can be considered a pragmatic solution to the problems raised by the infant industry argument rationalizing restrictions on international trade on grounds of economic development, namely: how long is the protection to be continued, and what assurance is there that it will not become permanent? The approach adopted by the Contracting Parties has been to place the burden of proof (by the provisions of Article XVIII itself) on the country seeking to impose such restrictions, to give it a limited release if that burden was carried, and to reconsider the case if an extension was requested. As Table I shows, both Ceylon and Cuba have received such extensions.

By this procedure the exception of Article XVIII has been made consistent, in principle, with the long term policy of freer international trade which is embodied in the GATT.

A number of the releases and extensions of prior releases were approved at and after the Ninth Session of the Contracting Parties at which the 1955 amendments to the GATT were drafted. It has been noted above that the *language* of these amendments constitutes a concession to underdeveloped countries and a

[30] *Ibid*, p. 26 ff.

[31] These discussions culminated in the report under General Assembly Resolution 623 (VII), *Commodity Trade and Economic Development*, U. N. 1954, II, B. 1. New York, 1954.

[32] This sentence is an extreme simplification, but is sufficient for the purposes of the text above. For a detailed discussion of the question, see W. A. Brown, *Restoration of World Trade*, p. 208.

TABLE I

RELEASES GRANTED BY THE CONTRACTING PARTIES UNDER ARTICLE XVIII
(Governmental Assistance to Economic Development)
1947–January 1957

Country Seeking Release	Type of Modification	Type of Release and Date Thereof
Ceylon	Under the Industrial Products Act importers are required to purchase a certain proportion of the corresponding local product in order to obtain an import license for a specified quantity of certain items (e.g., leather goods, cotton, iron and steel products, drugs, etc.)	*1949* 4–6 year releases granted, depending on type of product. *1952* 3–5 year releases granted for additional tariff items. *1955* 1–5 year extensions of releases which had been given in 1949, and were due to expire. 5 year release given for crockery. *1956* 5 year releases granted for additional items (bicycles, razor blades, batteries, etc.)
	Applied for authority to impose quota restrictions on imports of specified petroleum products to protect domestic refinery being built by present distributors of petroleum products in Ceylon.	*1955* 5 year releases granted, provided domestic refinery established by 1958 and does not sell exempted products at above landed cost in Ceylon of like products.
Cuba	Imposed import limitations on henequen and sisal fibres.	*1949* 5 year release granted. *1955* Extension granted to 10 August 1959.
Haiti	Established state monopoly for purchase, production and sale of tobacco, cigars and cigarettes.	*1950* 5 year release granted. *1955* Working Party concluded that earlier release had been unnecessary; no contravention of Agreement involved.
India	Wished ruling on formerly-imposed quota limit on imports of grinding wheels and segments. At time of request items were on open license.	*1949* India permitted to reimpose measure within 3 years; period of release to be determined thereafter. No further action.

Source: Compiled from various official reports of the Contracting Parties. (See footnote 1.)

weakening of the Agreement. But the way in which releases and waivers have been granted both before and since the review of the Agreement was concluded, suggests that an attempt will be made to maintain consistency between any new releases and the long term policy of freer international trade in much the same way after the amendments enter into force as was the case prior to the revision.

One final item in this brief survey of ten years of operations under the GATT remains to be mentioned: administration of the GATT. Originally the United Nations performed the administrative functions for the GATT, and the administrative relationships so-established were continued under the Interim Commis-

sion for an International Trade Organization.[33] An *ad hoc* intersessional committee was established in 1950 to act for the Contracting Parties between sessions. During the Ninth Session in 1955 the Intersessional Committee was established on a permanent basis. In addition to determining the agenda for regular meetings, it may initiate postal or telegraphic ballots to determine a necessary decision, and it has the assistance of a Secretariat in performing these functions.[34]

Also at the Ninth Session, the Contracting Parties drafted the Agreement on the Organization for Trade Cooperation. However, the legislation approving the President's request for authority for the United States to participate in the OTC was not acted upon by the Eighty-Fourth Congress, and there is no assurance that the pending request will fare differently in the Eighty-Fifth.

Failure of the Congress to act would not mean the end of GATT. The present semi-formal arrangements for its administration together with its provisional or conditional-definitive application can continue, at least so long as the Reciprocal Trade Agreements Act continues to be extended. However, the force and effectiveness of the GATT cannot be expected greatly to increase in the absence of the establishment of a formal organization which has the authority of United States support based not only on Presidential, but also on Congressional, approval behind it.

IV. CONCLUSION: EVALUATION OF THE GATT

Although the number of items with respect to which tariff reductions or bindings have been negotiated is large and although a substantial part of the United States trade when measured by value has been affected by such negotiations, the importance of this aspect of the GATT for the future can easily be exaggerated, whatever may have been its importance in the past.

As early as 1952 a former Director of the Office of International Trade Policy of the Department of State, who then had primary responsibility for United States participation in GATT, remarked that possible increments in dollar earnings by the outside world accruing as a result of further reductions of United States import barriers should not be overemphasized. He added: "There are estimates ranging from three-quarters of a billion to a billion-and-three quarters dollars, assuming all tariffs are abolished, which is not going to happen."[35] A similar position was taken by former Assistant Secretary of State for Economic Affairs Willard Thorp in 1954.[36] Since these statements were made, a further

[33] *BISD, II,* p. 208.

[34] The first report relating to the "Continuing Administration of the General Agreement" was adopted on December 16, 1950. *BISD, II,* p. 197 ff. See also *BISD, Third Supplement,* p. 9 ff; and *BISD, Fifth Supplement,* p. 17 ff. The membership of the Intersessional Committee elected on November 16, 1956, is as follows: Australia, Belgium, Brazil, Canada, Chile, France, Germany, Greece, India, Indonesia, Italy, Norway, Pakistan, Peru, Rhodesia and Nyasaland, United Kingdom and United States. Denmark has been "co-opted" as a member for the same period.

[35] Klaus Knorr, ed., *Strengthening the Free World Economy,* a report of a conference held at Princeton on December 16–17, 1952, (Princeton, 1953), p. 34.

[36] Willard Thorp, *Trade, Aid, or What,* Baltimore, 1954.

round of tariff negotiations resulting in reductions has taken place. Past estimates of future gains from such reductions must be scaled downward accordingly.

The various studies by economists predicting the effects of further tariff reductions either on our imports or on our exports are subject to wide margins of error because they must necessarily rest on assumptions about the responsiveness of buyer to price changes, levels of employment and income, propensities to import, technological changes and numerous other considerations. This is not to say that such studies should not be made, or that they may not throw light on the subject, but merely that alone they cannot serve as a basis for a policy. From the point of view of the United States, it should be noted that although exports are important as a source of income to particular sectors of the economy, they are a relatively minor source of national income in general, and appeals aimed at winning support for our continued participation in GATT resting on notions of our self interest in this area are not likely to be very effective.

Justification of the GATT cannot rest on easily presented and easily understood quantitative economic data for these reasons. But the GATT can be justified on other grounds. The GATT is an important instrumentality of United States foreign economic policy because the participation of this country in the GATT and the positions taken by it in the GATT, by and large, constitute concrete evidence to other countries that the United States recognizes and accepts the international responsibilities which its position in the world community has imposed upon it. So long as the GATT remains in force, even though on a provisional basis and as an executive agreement, it is clear to the rest of the world that the executive branch of the government does not intend to return to the economic and political isolationism characterized by the Smoot Hawley tariff, and that it will exert whatever pressures are open to it upon the Congress in support of this intention. The importance of this pressure is clear to every student of American politics, and representatives of foreign governments cannot be excluded from that category.

In 1952, for example, in confirming their 1952 resolution that United States restrictions on imports under Section 104 of the Defense Production Act impaired concessions made to various Contracting Parties, the Contracting Parties also recommended that the "United States Government ... continue its efforts to secure the repeal of Section 104" of the act "as the only satisfactory solution to the problem."[37] Clearly the term "United States Government" should be read to mean "the executive branch of the government."

For this reason, although one of those who played an important role in its negotiations has remarked that the GATT was conceived as a temporary measure so that the tariff reductions embodied and the policy codified in it could be made "effective as soon as possible and over as wide an area as possible," GATT has today become an important continuing element of our foreign economic policy.[38] Many of the actions taken by the Contracting Parties which are men-

[37] *BISD, First Supplement*, p. 32.

[38] W. G. Brown, "The General Agreement on Tariffs and Trade," quoted in W. A. Brown, *Restoration of World Trade*, p. 133.

tioned in the preceding pages of this paper seem to be of minor importance when considered individually. Yet running through them is the same central theme: the principle must be saved that trade barriers are to be decreased, and where a specific exception is necessary, it must be applied in a politically, although not always in a technically (e.g., in the case of a hard currency shortage) non-discriminatory way, and is to be the subject of international discussion and negotiation. For this is the philosophy of GATT.

In this philosophy lies an indication of the real future importance of the GATT. Its function is to continue to provide a code of behavior and a context within which differences of opinion and policy in regard to international trade matters can be peaceably discussed and settled internationally, and within which the tariff reductions and loosening of other restrictions which have been already achieved can be securely maintained. The GATT is not merely an economic document. It is a political document (both domestically and internationally) aimed at securing certain economic objectives thought to be desirable. It ought to be recognized as such.

The OTC would be an important step forward in establishing the GATT on a permanent formal basis, but creation of the OTC would not seem to be an essential condition to the continued operation of the GATT, unless the other Contracting Parties were to interpret the failure of the United States to participate in the OTC as indicative of a serious weakness in the position of the executive branch *vis a vis* the Congress in regard to the matter of international trade policy, or even as a change in policy. This might, of course, be the result of the failure of Congress to act favorably on the matter, but it seems unlikely. It is more likely that the GATT would continue to operate in the future as it has in the past. The establishment of the Intersessional Committee on a permanent basis suggests that the Contracting Parties may have themselves come somewhat reluctantly to this conclusion, or at least to have envisaged this possibility even while they were drafting the Agreement on the Organization for Trade Cooperation. For both actions were taken at the same GATT session in 1955.

A NEW ASSESSMENT OF VEBLENIAN ECONOMICS*

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Any informed book on Thorstein Bunde Veblen and his views on the genesis and nature of economic life is bound to be very refreshing in our day. Encyclopedic writings on economics possessing a wide sweep and a dominant interest in historical development, in the interrelation of economic and other social institutions, in a realistic portrayal of our total economic situation, and in the bearing of current trends on the probable economic future are all but extinct. Even if a writer, today, possessed the impulses and vision of a Veblen, Sombart, Max Weber or John A. Hobson, he would find it all but impossible to express his professional yearnings in the popular economic "newspeak" of calculus and higher differential equations. Any economist trained according to the tenets and techniques which have dominated the economic field during the last two decades would find it easier to enter and operate in a physics laboratory devoted to nuclear research.

Whatever the merits or defects of Dr. Dobriansky's book, the author meets Veblen on his own ground of realistic description and analysis. There are no flights into quantitative mysticism, nor does he find it necessary to refute the instinct of workmanship in terms of calculus. His volume is a competent and very well-informed critical treatment of both Veblen's numerous books and articles and the scientific and philosophical frame of reference within which Veblen developed his thinking. The author deals with Veblen's personal and academic history, so far as this affected his ideas and writings, and with the intellectual background, development, implications, professional influence, and public significance of Veblen's contributions to economic and social science. All of these are subjected to cogent criticism which, the author seems to feel, reduces Veblen's method and system to something of a shambles. Since the book covers rather thoroughly most of Veblen's writings, with an exposition of their contentions, liberally interlarded and interlaced with Dr. Dobriansky's comments and criticisms, and those of many others, limitations of space prevent any serious attempt to deal with all the critical details and estimate their validity. The review must be limited to fundamentals and an over-all appraisal of the book.

Professor Dobriansky correctly presents Veblen as being more of an encyclopedic social scientist, primarily interested in economic facts and trends, than an orthodox economist concerned mainly with a systematic development of what usually passes for economic science, namely, "pecuniary logic." But he does demonstrate that there is more conherence and unity in Veblen's doctrines than many earlier expositors and critics have believed.

* This essay is a review article on the book, *Veblenism: A New Critique*, by Lev E. Dobriansky. Washington, D. C.: Public Affairs Press, 1957. Pp. xxi, 409. $6.00.

There is a long and competent treatment of the development of philosophy from St. Thomas Aquinas to John Dewey, which was hardly required since Professor Dobriansky ends up by concluding that Veblen did not develop whatever system he had on the basis of *any* technical body of philosophical thought: "If any characterization is to be made of philosophical Veblenism, it can be represented only as an extreme expression of modern empiricism, embracing the whole armament of metaphysical skepticism, crass nominalism, and some variant of disguised moralism." Among the great philosophers of modern times, Veblen was obviously most deeply influenced by Hume and Kant. In other places, the author stresses the resemblance of Veblen's working philosophy to Dewey's pragmatism and instrumentalism. He also emphasizes Veblen's idea of economic activities as a "social process," which he seems to have developed from Darwinism and, possibly, also from the sociological theories of Albion W. Small at Chicago, who, in turn, drew upon the works of the Austrian sociologist, Gustav Ratzenhofer. It is certain, however, that among the sociologists of his formative period, Veblen was by far most deeply influenced by the sweeping social evolutionism of Lester Frank Ward and his stress upon the prime importance of the social sciences in social prediction and reconstruction. Indeed, Veblen regarded himself as a disciple of Ward.

The key to Veblen's conception of evolutionary economic science is to be found in his broad application of Darwinian principles to the growth of economic life and institutions:

> His application of Darwinian postulates to society is constructed along lines parallel to Darwin's investigations into nature. First, cultural and economic evolution is viewed as a non-teleological process, a blind movement of the cultural organism without any inner necessity toward a goal predestined in history, one that may spell for better or for worse. Second, the prime mover in this evolution is the force of material causation represented by technology in its broadest sense, entailing not only mechanical invention but also resources, terrain, climate, and the like. Third, the civilization founded upon the given material bases is a scheme of institutions, which in the flow of "a cumulative sequence of habitation" emerges "from the habitual response of human nature to exigencies that vary incontinently, cumulatively, but with something of a consistent sequence in the cumulative variations that so go forward . . . . ." In other words, in what essentially amounts to an explanation of social behavior on the familiar grounds of conditioned reflexes, every mechanical innovation, every new utilization of resources, changes in topography and so forth, constitute exigential variations creating new situations that serve to stimulate new variations in the habitual responses of human nature (p. 115).

In addition to the direct influence of Darwinian biological evolutionism on Veblen's genetic approach to social and economic life, he was deeply affected by the evolutionary anthropology of the era following Darwin, such as the works of Herbert Spencer, E. B. Tylor, Julius Lippert, Lewis Henry Morgan and others. Spencer was not only a cosmic evolutionist in his *First Principles* but a social evolutionist in his *Principles of Sociology*. Veblen studied under William Graham Sumner at Yale, and Sumner was the ablest and most enthusiastic American expositor of Spencer and Lippert. Veblen has been much criticized for his ac-

ceptance and use of evolutionary anthropology, which later came under serious criticism at the hands of Franz Boas and his disciples, but today there is a notable reaction toward the return to a chastened evolutionism, a movement led by Professor Leslie A. White of the University of Michigan. From Spencer and other "organicists" Veblen developed the idea of social evolution in terms of an expanding social organism which included economic evolution.

Along with his social evolutionism, derived mainly from Darwin and the evolutionary anthropologists, another of Veblen's main working hypotheses was his reliance upon the conception of instincts, which he may have obtained mainly from William James. Most notable here was his famous formulation of an "instinct of workmanship," namely, "a bias toward effective work and revulsion against futile effort." Professor Dobriansky effectively criticizes the instinctivist psychology in the light of recent psychological research, but concedes that Veblen really employed the instinct of workmanship in the sense of "the human power of creativity," and in this guise it constituted an illuminating and valid working hypothesis. Indeed, Professor Dobriansky appears to be more annoyed because Veblen employed instincts "in place of natural moral law" than on account of the fact that the instinct theory fails to accord with the findings of contemporary psychological science. Moreover, as Wesley Clair Mitchell pointed out a generation ago, Veblen did not utilize the concept of instincts as rigidly as did later extremists like William McDougall, but rather regarded them as essentially plastic social habits leading to institutional behavior.

Veblen's underlying method of investigating economic phenomena was primarily that of genetic and comparative cultural analysis, conceived in terms of what we now call operationalism. Professor Dobriansky concedes the utility and validity of this approach:

> Veblenism represents this operational mode in economics by its emphasis on cumulative change, the empirical and the concrete. It affords a discipline of persistently viewing things in concrete context and thus allows for the prolific development of a type analysis which is not readily obtainable in the precinct of abstractive logical analysis. Properly and fairly understood, it provides a wholesome counterbalance to the sterilities of excessive abstractionism; it is as stimulating as, in fact more stimulating than abstract analysis in its problem-raising capacity; it definitely surpasses the other in inclining the theoretical interest of economists and other social scientists toward the cultivation of socio-economic philosophy, the prime importance of which the state of the world today abundantly attests to (pp. 163–164).

Such an orientation and methodology led naturally and logically to Veblen's conception of economics as primarily a study of the development and operation of economic *institutions:*

> For Veblen, institutions were not to be accepted as so much constant background for analytical exposition; instead they are efficient agents in the play of economic forces. Property, competition, technology and so forth are institutional elements dynamically changing not only under the impact of external factors but also under the momentum of their internal mutations. Along with some of the earlier thinkers Veblen is deeply interested in the evolution of economic institutions—how they came to be what they are—

but he surpasses them by attempting to provide a psychological theory of such development. He focuses his theoretic sights on the changes effected by institutional evolution upon the network of economic relationships and then traces the cumulative sequence of institutional changes. Furthermore, Veblen bases his evolutionary treatment of institutions on economic interest; but since he has no strict economic determinism, as Marx does, he can adapt his evolutionary treatment according to any dominant non-economic interest. It would seem, therefore, that on these grounds of differentiation, not to mention less important ones, Veblen may properly be esteemed as the founder of institutionalism (p. 218).

It is probable that Veblen's institutionalism was derived, in part at least, from the teachings of his preceptor, William Graham Sumner, at Yale. Sumner gave special attention to the evolution of institutions in his sociological writings, and he placed even more emphasis on economic problems than on purely sociological questions. In those days, economists regarded Sumner as primarily an economist—an ardent protagonist of free trade, sound currency, and *laissez-faire*. Professor Dobriansky correctly stresses the point that Veblen, himself, never specifically designated his system of economic thought as "Institutional Economics." One of the first applications of this term to his *corpus* of economic doctrine appears to have been made in a notable article by one of Veblen's abler disciples, Walton H. Hamilton, in 1919, near the close of Veblen's most prolific period of economic writing. Despite Veblen's preëminence in this school of economic thought, it is well to remember that institutionalism does not stand or fall solely on the basis of the validity or defects of Veblen's work. In an able article on "Institutional Economics" by Professor Edwin E. Witte, in the *Southern Economic Journal*, October, 1954, the author only casually mentioned Veblen and dealt mainly with the work of John R. Commons and his students and associates. European economists would cite the work of Sombart, Max Weber, Kovalevsky, Hobson, R. H. Tawney, the Webbs, and the Hammonds.

Basic in Veblen's institutionalism is his famous antithesis of business and industry or, more specifically, that between business enterprise and technology—the "industrial arts." Veblen dealt with business enterprise chiefly in his *Theory of Business Enterprise* and *Absentee Ownership*. He regarded business enterprise as, on the whole, predatory and exploitive, while he held that technology and its related complex of resources and institutions are the chief dynamic factors in economic development and social causation. In the contemporary period, the outstanding manifestation of the predatory aspects of business enterprise has been the operation of what Veblen called "absentee ownership." Business enterprise, Veblen held, not only tends to lag behind technological development but obstructs the latter and diverts too large a portion of its product to private gain rather than applying it to economic progress and social well-being. Its main instrument since about 1900 has been finance capitalism, the operations of which were most thoroughly expounded in Berle and Means, *The Modern Corporation and Private Property*. Veblen presented a unified summary of the contrasting attitudes and results of business enterprise, based on the price system, and technology in his *The Vested Interests and the State of the Industrial Arts*.

Distrusting the control of economic life by businessmen, Veblen became favorable to a technological managerialism, a conception that he outlined in his *The Engineers and the Price System*. While not formally an adherent to the movement which came to be known as Technocracy, his belief in the social logic of a control of economic activities by industrial engineers inspired several leaders of the movement, among them some of his students at the New School for Social Research. It should be made clear, however, that Veblen's technological managerialism was rather ambiguous and did not fit very logically into his general outlook. Veblen was not a true program maker.

Although Professor Dobriansky does not accept, at least without basic qualifications, any of Veblen's basic assumptions or patterns of reform proposals, he does concede his merits as a social prophet. Notable here were his predictions relative to the course and results of the first World War:

> His predictions on the outbreak of a general European war and on the revolutionary eruption in the multi-national Russian Empire soon found factual validation in the events of 1914 and in those of the Kerensky government and the subsequent Bolshevik regime in 1917. And so with his later predictions on the grave inadequacy of a peace of reparations and territorial reapportionment that would only ignite flames of grievance in a patriotically resurgent Germany; on the futility and eventual deterioration of the League of Nations serving as an organizational tool in the enforcement of such an insular peace; on the imminence of a world-wide economic collapse and the progressive crystallization of social tension and recurrent rifts in socio-economic relations; the mutual attraction of Japan and Germany on the world stage of political strategy and maneuvre; and finally, on the tenuous, trucelike peace inherently presaging the renewal of global conflagration. A brief recital of historical events in the past thirty-six years would demonstrate the accuracy of Veblen's observations (p. 22).

Not only did Veblen prove an uncanny prophet relative to the outcome of the first World War, he also foretold the coming of the Cold War and the Orwellian system which has followed the second World War and created a regime of military state socialism and state capitalism:

> According to Veblen, two cultural forces or tendencies are at work, and business enterprise will succumb to one or the other. First, in modern industry there is the discipline for the industrial republic. Second, there is business enterprise which contains the spiritual seeds of an aggressive and predatory national policy that will flourish in the form of a patriotic, warlike enterprise. This policy will make for a conservative animus on the part of the underlying population. The masses will then gradually shift their loyal affections from business leadership to the undertaking military and dynastic interests, thereby symbolizing the revival of "national ideals of servile status" (p. 341).

The events since 1945 amply attest that it is the second alternative which has won out, and it would be difficult to state more concisely the condition in which the civilized world now finds itself.

What are the conclusions which the reviewer draws from Professor Dobriansky's assessment of Veblenian economics?

In the first place, one may readily concede that it is an urbane and dignified book in which the author obviously bends over backwards in the effort to be

fair. This was no easy task for him, since his background and assumptions are those of a devout Catholic scholar, and no modern writer on economics could be more challenging and exasperating to a Catholic economic philosopher than Veblen. There are few "snide" remarks or "smears" in the book. In fact, there is an undercurrent of sympathy with Velben's conception of modern business life. The Catholic Church of the Middle Ages also looked upon business "enterprise" as mainly predatory. Its economic doctrines deeply influenced the Law Merchant and other restraints upon manufacturing and commerce which sought to curb predatory activities, such as the looting of merchant caravans by feudal lords, shoddy work by manufacturing guilds, and engrossing, regrating and forestalling by merchants at the medieval fairs. The Protestant theologians, especially John Calvin, were the first to glorify business enterprise, as Max Weber, R. H. Tawney, and G. E. Harkness have so clearly demonstrated.

Professor Dobriansky is obviously a very learned man and he demonstrates his acquaintance with a wide range of philosophical, psychological, biological, anthropological, sociological and economic materials. But this very erudition, or at least the lengthy display of it, often proves a handicap and detriment when it comes to the handling of Veblen's own ideas and methods. The latter frequently get lost in the maze of comments drawn from this background material. There are many pages which have little relevance whatever to a critique of Veblen; such is the extensive treatment of the history of philosophy from the medieval period onward. It would have been more cogent and helpful if the author had saved this space for materials that bore directly on Veblen's writings and opinions.

Another mistake, in the reviewer's opinion, is that Professor Dobriansky sets forth in sequence specific ideas and opinions of Veblen and then, after each brief bit of Veblen, he interjects his own criticisms and those of others. This constant intermixture of fragments of Veblen with profuse criticisms and refutations, even if the latter are valid, leads to a lack of continuity and to discursiveness and repetition—in several cases even to some contradiction, since at times the author's appraisal of the same specific contention of Veblen varies considerably in different parts of the book. It would have been far better to have assembled the fundamentals of Veblen's assumptions, methodology and doctrines—his system, in so far as he had one—as a coherent whole, and then followed this by a general critical analysis and appraisal. Such a procedure would have been far more convincing. Any reader, save one already very familiar in advance with Veblen's work as a whole, would be doubly lost when reading this book: lost in the mass of extraneous material and confused by the endless alternation of expository fragments and critical comments. That the author *could* have executed such an over-all exposition and critique of Veblen's work is demonstrated by his excellent concluding chapter: "Veblenism in Retrospect and Prospect." This basic over-all defect of the Dobriansky volume can best be discerned by comparing it with the magisterial synthesis and critique by Joseph Dorfman in his *Thorstein Veblen and His America.*

While Professor Dobriansky surely proves that Veblen's knowledge and hand-

ling of some philosophical, psychological, biological and anthropological material was not in accord with the best knowledge in these fields in the midtwentieth century, it may be countered that even Veblen's treatment of instincts is up-to-date science incarnate when compared to the doctrines of natural law, natural rights, transcendental moral norms, and the like, to which Professor Dobriansky so firmly adheres. Veblen handled the background material involved in the genetic approach to economic life in a very competent fashion, considering the time at which he wrote. Even in those cases where his psychological and biological assumptions were out of accord with our contemporary knowledge in matters of detail, it does not always follow that his general methodology or basic conclusions were unreliable or misleading, a fact which Professor Dobriansky concedes with respect to the classic "instinct of workmanship." In fact, he concludes that while much, if not most, of Veblen's methodology and many of his specific contentions were fallacious, in whole or in part, and that there is "no adequate rational ground" for accepting his general system of social and economic thought today, nevertheless: "In the perennialist spirit, American Veblenism will always have occasion to express itself, and for the good of the whole body of social thought."

In as much as the reviewer is, in a broad and general way, a Veblenian in his approach to the field of economics, it is hardly to be expected that he will agree that Professor Dobriansky has effectively disposed of Veblenism. If Veblen had written between 1930 and 1958 instead of between 1892 and 1925, he would certainly have drawn upon much new knowledge in background material for his genetic approach and made use of a mass of relevant new economic data and events, but there is little reason to believe that he would have notably modified his methodology, perspective, or conclusions. Nor, in the opinion of the reviewer, would there have been any logical or scientific necessity for his doing so. He still holds to the opinion that the general Veblenian institutional description and analysis of economic life is the most fruitful, illuminating, and practically useful approach to the field to be found in the entire history of economic thought. It is probably not an exaggeration to regard the classic *Theory of the Leisure Class* as one of the most original, stimulating, and constructively provocative single volumes in the entire record of American economic literature. It contains and develops his most notable antithesis—perhaps more basic and striking than that between business enterprise and technology—namely, that between honorific abstention from labor, conspicuous consumption, exhibitionist waste, and the like, on the part of the leisure class, and the underlying human "instinct of workmanship" and the resulting "bias towards effective work."

Of course, the most ardent institutionalist, if sensible, would not contend that Veblenism was perfect in all details. Veblen was a pioneer in this field, and pioneers are rarely perfectionists. There are more technical flaws in the details of Darwinian biology than in Veblenian economics, and yet no informed person questions the general validity of Darwinism. Further, there is little point in assailing Veblen for what he did not pretend to be, for example, a sytematizer reducing the totality of economic science to a polished and organic body of

coherent thought. He did not pretend to be a John Bates Clark, an Alfred Marshall, or Frank W. Taussig.

The essentials of institutionalism, as the reviewer understands it, are the study of how our present economic system came into being, an accurate factual reporting of its nature, a realistic analysis of its operations, and the formulation of the conclusions which may be drawn from all this as to its adequacy for our time and the prospect of its change for better or worse in years to come. If this is not a sane and sensible view of the field and responsibilities of economic science, then the reviewer might as well confess total ignorance in the premises. The institutional approach provides for ample use of any sensible and effective application of statistical measurement and analysis of facts, even if it does not condone the currently popular microcosmic quantitative mysticism and the flight into the protective and exhibitionist newspeak of higher mathematics. Indeed, in its demand for accurate reporting of facts, institutionalism requires much statistical material, and leading institutionalists like Wesley Clair Mitchell have impressively demonstrated how they can supply this need.

Most institutionalists do not regard the current all-embracing passion for higher mathematics as a novel, revolutionary and constructive approach to economic data and problems. They are more prone to view it as the revival of an old technique, adopted to give the obscurantists a longer lease on life. So far, it has been highly successful in achieving this objective, and has even captivated many whose underlying motivation is certainly not economic or social obscurantism, as the case of John Maynard Keynes so forcibly demonstrated. Of course, the mathematicians retort to strictures like these by holding that they are only a "sour grapes" smear, uttered by those personally incapable of comprehending the charm and services of esoteric equations.

Institutionalism may repudiate the *a priori* theorizing of classical economics, a school of economic thought in which one of its leaders declared that it was just too bad for the facts if they did not support the underlying theory. Perhaps the most astute and abstruse of all American classicists once told a student of the reviewer that he could formulate more sound economic theory when whittling on a stick in his kitchen than by reading all the economic history and factual data in all the libraries of the world. Institutionalism does not, however, frown on empirical theorizing; indeed, it holds that valid theory should be one of the outstanding products of the terminal stages of institutional study. But it does maintain that all valid theory must be drawn from reliable and adequate facts and must constantly be revised as the data change under the impact of the ever-shifting economic scene. There are no static "iron laws" in economic science which remain valid, irrespective of changing conditions and the facts that shift with such changes—unless it be the "iron law" that theory must accord with alterations in its factual foundations.

Despite all this, the reviewer concedes that for the time being, and perhaps indefinitely, institutionalism is virtually dead. It cannot thrive in the atmosphere of the Orwellian system of escapist doublethinking and newspeak to which the world today, political and intellectual, seems to be consecrated. But in all

fairness, it should be pointed out that the economists are no greater offenders than other social scientists today. Any interest in a genetic (historical) and comparative study of institutions is as dead in political science and sociology as it is in economics. Even historians are ceasing to be truly historically-minded nearly a half century after James Harvey Robinson wrote his stimulating book, *The New History*, as witness the "historical blackout" of virtually the last twenty years on the realities of world affairs and the recent and continuing flight into the trivia of the War between the States.

COMMUNICATION

COUNTERCYCLICAL CORPORATE TAX RATES

One of the less obvious, but highly possible, long-run effects of a fiscal policy which causes corporation income tax rates to be altered in a countercyclical manner is a reduction in the economic rate of growth. Such would be the economic impact if this tax policy discriminates against durable goods industries. It should be pointed out, at the start, however, that the purpose of this note is not to contest the highly cogent arguments favoring a countercyclical tax policy but rather it is to make explicit one of the possible inter-industry effects of this policy. Economists are not likely to alter their opinions concerning fiscal policy as a result of the following analysis but they may want to revalue their estimates of the costs (albeit non-quantifiable) of such a policy.

THE EFFECT OF COUNTERCYCLICAL POLICY ON CORPORATE RATES OF RETURN

Over many years, two corporations may earn the same rate of return, before taxes, on their invested capital. However, if corporation income tax rates change through the years, and if corporations earn their incomes in a dissimilar time pattern, they are not likely to earn the same rate of return *after* taxes. As an example, assume that during a 10-year period, corporate income tax rates are 70 per cent during the first five years and 30 per cent during the last five years. To the corporation earning its income in a stable stream throughout the period, a ten-year average 12 per cent return on investment before taxes would be equivalent to a 10-year after tax annual rate of return of 6 per cent. To the corporation earning all of its income during the first five years, a 10-year average 12 per cent return on investment before taxes would be equivalent to an average after-tax return of 3.6 per cent, while the fortunate corporation receiving all of its 12 per cent average before-tax rate of return during the last five years would receive an 8.4 per cent after-tax rate of return. It is important to note that this is *not* due to the tax treatment of corporate losses, since the hypothetical corporations in this example need not suffer losses in any year of the period for this effect to occur.

This hypothetical case demonstrates that, unless corporations are taxed on their multi-annual average rather than their annual incomes, some corporations may be "discriminated" against by a tax policy which charges substantially higher tax rates during prosperous periods. If, in fact, the *long-run before tax* rates of return are approximately equal between industries with different sensitivities to cyclical fluctuations in national income, then a tax-induced mis-allocation of resources may result.[1]

[1] This is the case, of course, only under the assumption that total corporation income taxes cannot be shifted backwards and forwards. Recent views hold that some part of the corporate income tax is shifted but few writers hold that the total tax is shifted. For an excellent discussion of this subject, see B. U. Ratchford and P. B. Han, "The Burden of the Corporate Income Tax," *National Tax Journal*, December 1957, Vol. 10, pp. 310–324.

DISCRIMINATION AGAINST DURABLE GOODS INDUSTRIES

It is generally regarded as proved that the industries most highly sensitive to cyclical fluctuations are those producing durable goods. One study,[2] for example, purports to show that in the 1929 to 1937 period, the industries whose share of the national income fell the most relative to their "full employment share" were the durables: machinery, automobiles, transportation equipment, lumber, non-metallic mining, iron and steel products, and stone, clay, and glass products. The least sensitive industries, by this definition, were: food, public utilities, tobacco.

If durable goods industries are more sensitive, how much would they be penalized by a countercyclical tax rate policy? To answer this question, data showing the fortunes of identical corporations, over time, are needed. These data can show how, on the average, a durable goods firm fares over a business cycle relative to a non-durable goods firm.[3]

Several studies of identical firms' incomes over time were made either during or shortly after the 1930's depression.[4] In general, these studies indicate that a long-lived durable goods firm will earn a substantially larger percentage of its multi-annual income during good times than will a non-durable goods firm.

Two samples of medium and large size corporations, one consisting of the net earnings of 219 capital goods and 181 consumption goods companies between 1929 and 1938,[5] and another of 49 durable goods and 54 non-durable goods companies from 1929 to 1936,[6] demonstrate the much greater instability of the durable goods firms. In the first sample, the three years during which the economy was its closest to full-employment were 1929, 1936, and 1937. Knowing what we know today, we might not have advocated an "anti-inflationary" raising of corporation income tax rates during these years; nevertheless, since tax rates are ordinarily set *ex ante*, and since these were the best[7] years of the period, tax rates

[2] See E. F. Denison, "The Industrial Composition of National Income," *Survey of Current Business*, December 1948, pp. 14–17.

[3] Data showing aggregate income in various years accruing to *all* durable and non-durable manufacturing, regardless of whether they exist throughout the period or not, indicate whether the discrimination (if any) is against durable goods firms, in general, regardless of how long they exist. For example, while data for identical firms over time may indicate little difference between durable and non-durable, a large increase in the numbers of durable firms during prosperity may cause *aggregate* durable income to fluctuate a good deal more than identical firm income would indicate. U. S. Treasury Department *Statistics of Income* data and other aggregate data were analyzed in the author's dissertation at Harvard University, *The Averaging of Income for Tax Purposes*. However, since such data seemed to add little to the analysis, no aggregative data are used in this note.

[4] *Capital Goods Industries and Federal Income Taxation*, Machinery and Allied Products Institute, Chicago, 1940; J. C. Baker, "Fluctuation in Executive Compensation, 1928–1936," *Review of Economic Statistics*, Vol. 20 1938, pp. 65–75, 68–69; *Financial Characteristics of American Manufacturing Corporations*, Temporary National Economic Committee, Monograph No. 15, 1940, pp. 8–13, 38–40, Appendix F, pp. 203–227, Table I.

[5] Machinery and Allied Products Institute, *op. cit.*

[6] J. C. Baker, *op. cit.*

[7] "Best" here refers to the state of the economy as it might have looked to fiscal-policy makers in those years: gross national product and aggregate personal income (in terms of

under a countercyclical fiscal policy would have been somewhat higher during these years. These three "peak years" out of the 10-year period provided 84.1 per cent of the capital goods companies' incomes but only 36.1 per cent of the consumption goods firms' incomes.[8] In the second study,[9] the three years of highest corporate tax rates were 1928, 1929 and 1936. Here, the three relatively good years[10] provided 92.7 per cent of the total income of the durable goods firms' incomes and 50.1 per cent of the non-durables.

What would this mean in terms of taxes paid, and income after taxes, had a countercyclical fiscal policy been operating in these years? These data indicate that, during a nine-year business cycle in which there were three relatively good years and six depressed years, a durable goods firm might earn 90 per cent of its nine-year earnings in the three good years while the non-durable approximately 40 per cent.[11] If corporate tax rates had been, for example, 30 per cent of corporate net income during the three fairly good years and 20 per cent during the six depressed years, a durable goods firm earning a nine-year income of $10,000 would pay nine-year total taxes of $2900 while the consumption goods firm earning $10,000 would pay taxes of $2400. This would leave the durable goods firm with $7100 after tax income, and the consumption goods firm with $7600. The durable goods firm would pay 20.8 per cent (=2900–2400/2400) more taxes over the nine-year period. Furthermore, the durable goods firm would receive only 93.4 per cent (=7100/7600) as much after tax income as the consumption goods firm. Note that this effect occurs regardless of the income tax treatment of corporate losses, since neither of these firms need suffer a loss during this period under the assumptions of the example.

Table 1 shows how a typical durable goods firm might fare compared with a consumption goods firm on the assumption of other combinations of tax rates during prosperity and recession. As would be expected, Table 1 shows that the percentage increase paid by the durable goods firm is directly related to the absolute difference between the prosperity's and recession's tax rates. Table 1

constant prices) were highest in these years; during these years, indices of industrial and agricultural production increased from the preceding years; and before tax corporate profits were the highest of the period. (Source: *The Economic Report of the President*, 1956, Appendix.)

[8] Machinery and Allied Products, Institute, *op. cit.*, p. 27.

[9] J. C. Baker, *op. cit.* pp. 68–69.

[10] "Good" in sense of footnote 7, above.

[11] Other samples of identical firms' incomes during this period corroborate this. For example, a sample of 380 firms which survived the 11-year period 1926–1936, each firm with assets of less than $250,000 in 1926, was drawn for study by the Temporary National Economic Committee (*Financial Characteristics of American Manufacturing Corporations*, Temporary National Economic Committee, Monograph No. 15, 1940, pp. 8–13, 38–42, Appendix F, pp. 203–227, Table 1.) These small firms were chosen from five industries. Being small, their income fluctuation exceeded that of the larger firms chosen for the Baker and M.A.P.I. studies described above. For example, the most stable of the industries, baking corporations, received more than three-quarters its total income during the five relatively prosperous years during this period, 1926–1929 and 1936. However, the durable goods firms, those in the stone and clay products, and machine-tool products, received *all* their net income of this period during these years.

TABLE 1

COMPARISON OF TAX EFFECTS OF A COUNTERCYCLICAL POLICY, DURABLE GOODS VERSUS NON-DURABLE GOODS FIRMS, NINE-YEAR CYCLE WITH THREE PROSPEROUS YEARS

Tax rates In		Greater taxes paid by durable goods firms as a percentage of consumption goods firms' total taxes	After-tax income of: Durable firms / Non-durable firms
Prosperity	Recession		
		per cent	*per cent*
30	20	20.8	93.4
40	20	35.7	86.1
50	30	26.3	83.8
40	10	68.1	80.7
50	20	46.8	77.9
60	20	55.5	68.7
50	0	125.0	68.7
75	0	125.0	46.4

also shows that the after-tax income of the durable firms approaches a limiting position of approximately 70 per cent of the non-durables, except for the highly unlikely tax rates noted at the bottom of Table 1. Table 1 only applies to one example of a business cycle, one which is, in fact, very severe. A different table could be constructed for each hypothetical business cycle.

One of the largest samples of the incomes of identical firms is the War Profits Study.[12] Here, data for the years 1937 to 1944, representing a cycle of three depressed years (1937–1939) and five relatively prosperous years,[13] are available for 946 durable goods firms and 1206 non-durable goods firms. Over this eight-year cycle, the durable goods firms earned slightly more than 90 per cent of their total income during the five prosperous years while the non-durable goods firms earned approximately three-quarters of their income during these five prosperous years. It should be noted that some of the durable goods categories, such as stone, clay and glass and auto equipment, behaved more like non-durables while a few of the non-durables, such as transportation (excluding railroads) and rubber products, behaved like the durables. How much of this was due to the peculiarities of the war situation itself and how much to the type of business cycle and industry represented is highly conjectural.

If this type of business cycle (i.e., three poor years and five good years) were considered typical, rather than the cycle represented in Table 1, the effects of countercyclical policy on the differential effect between durable and non-durable goods firms would be greatly diminished. For example, with a somewhat realistic countercyclical policy causing prosperity and recession corporate tax rates to

[12] War Profits Study, No. 16, *Profits Growth to Wartime Peak*, Office of Price Administration, Office of Temporary Controls, 1947.

[13] It is recognized that wartime data are far from perfect for these purposes, since the prosperity experiences of both durables and non-durables goods industries were affected by the war in different ways. However, since little data of identical firms' incomes over time exist, and since the data showed significant differences between the durables and non-durables, these data were not discarded.

differ by 10 per cent, the durable goods industries would receive more than 95 per cent of the long-term after-tax income of the non-durable goods firms. And, only the most drastic difference in tax rates, such as 80 per cent in prosperity and zero in depression could cause the after-tax income of durable firms to equal only 70 per cent of the non-durables.

CONCLUSIONS

Theoretically, a countercyclical tax policy may discriminate against durable goods firms. Since the products of these firms are among the major sources of economic growth, such an effect should be considered one of the "costs" of such a fiscal policy. In a sense, all policies seeking to stabilize the business cycle may have this effect, but this specific one has been somewhat ignored until now.

If, as is likely, the long-run rates of before tax returns are approximately equal between durable goods and non-durable goods firms, and if corporations can not shift all of their income taxes, this study indicates that countercyclical tax policy may be discriminatory against durable goods firms. This occurs because these firms earn a disproportionate amount of their income during prosperous periods, when tax rates would be relatively high.

However, the severity of the discrimination is a direct function of the differences between "boom and bust" tax rates, and the relative durations of the two major phases of the cycle. Unless the duration of the depression is one-half or more of all years, and unless the absolute difference between the tax rates of the two periods is 30 per cent or more—both of which are highly unlikely—the extent of discrimination against the durable goods firms is likely to be of a minor degree.

The RAND Corporation WILBUR A. STEGER

BOOK REVIEWS

The Economics of Sir James Steuart. By S. R. Sen. Cambridge, Mass.: Harvard University Press, 1957. Pp. VII, 207. $5.00.

The author was led to write this book while a student at the London School of Economics because of the service of Sir James Steuart as first economic adviser to the Government of India from 1772 to 1777. It is a study that has long needed to be written. Among all British economists whose work is of major importance none has suffered more from cold neglect than has Steuart. Economists in the main either have never known him or have cursorily dismissed him as the last of the mercantilists—an anachronism in a rapidly changing era. Yet assuredly the man who wrote the first comprehensive work, in two large volumes, bearing the title *An Inquiry Into the Principles of Political Economy*, and who was a pioneer in the development of scientific methodology and economic analysis, deserves a more prominent niche in the hall of fame.

In his appraisal of Steuart's life and work Dr. Sen has made a lasting contribution to economic literature. He has studied painstakingly much original material in the archives of London, Tübingen and Delhi. His book includes a brief biographical sketch, the philosophical background and a critical analysis of Steuart's economic theories and system of economic controls. He has sought to be scientific and impartial, often preferring to let Steuart speak by direct quotation rather than to interpose his own judgment.

Dr. Sen advances three principal reasons why Steuart has not been accorded due recognition. First, his ideas were not attuned to the Zeitgeist of the times. The spirit of laissez-faire had become supreme in the economic and political *milieu*. Steuart, however, was by no means an orthodox mercantilist. For example, he laid great stress on natural forces and regarded self-interest as the ruling principle, but he did not believe that the interaction of these forces would *ipso facto* lead to an optimum situation. Essentially conservative in outlook, an ardent advocate of democracy and a free society, he nevertheless felt that a strong controlling authority may be needed to attain the maximum social good and that this authority should be vested in the state. In holding these views he was up against the spirit of his age.

A second reason for the failure of Steuart's book, published in 1767, to receive just acclaim was the appearance of Adam Smith's classic work in 1776. The *Wealth of Nations* was a great literary masterpiece. It achieved immediate popularity and its success was continuous. Steuart's book in its first edition sold "reasonably well," although not fast, while the French and German translations fared much better. The "originality" and "penetrating genius" of the author were readily acknowledged in the long reviews in critical journals, but his advocacy of planning and control fell on deaf ears. Furthermore Smith, who borrowed a good deal from Steuart's book, who knew him personally and heard him expound his theories, deliberately refrained from even "once mentioning it" in the *Wealth of Nations*. This was his strategy in his effort to demolish completely Steuart's system. Possibly also Smith was influenced by Steuart's alleged

connection with the Jacobite insurrection which resulted in defeat at Culloden Moor and his subsequent exile in Europe for nearly twenty years.

A third deterrent to Steuart's success was his abstruse and confused style of writing. Dr. Sen suggests that his cumbersome style may have resulted from his long exile and that the influence of his stay in Tübingen may have been detrimental. His work suffers greatly from his pedantic and unfamiliar use of terms, tedious sentence structure and unnecessary detail. Nor is it free from numerous inconsistencies.

On methodology Dr. Sen is of the opinion that Steuart compares favorably with his contemporaries including Hume, Cantillon and Adam Smith in particular. On the development of economic institutions and historical perspective he lays stress on inductive studies, but in the analysis of fundamental economic forces he makes use of deductive analysis and generalization. His purpose is to establish principles which may be moved "into a regular science." Thus he is concerned with maintaining a proper balance between induction and deduction and, as noted by Fraser, he tries to develop a precise terminology. That he lapsed from this ideal, is prolix and often involved, was recognized by Steuart himself, and he apparently had considerable qualms about his heavy use of language.

Steuart's principal contributions relate to his theory of population, analysis of value and price, his treatment of money and banking, public finance, and his exposition of the economics of control. Malthus acknowledges his debt to Steuart in his Essay on Population. Dr. Sen includes him among the writers who were of two minds about labor and supply and demand theories of value, but he thinks that his supply and demand theory was superior to that of Locke or Law and was "quite elaborate" for his period. Steuart defines consumption as the destruction of utility, gives much more emphasis to demand than to supply and "makes one of the earliest uses of the equilibrium concept in economics." He refutes the notion that money and coin are synonymous, criticises the quantity theory of money, and proposes a monetary theory of interest. Dr. Sen suggests that Keynes was unfortunate in overlooking Steuart when he cited certain mercantilists in support of his arguments on liquidity preference, the quantity of money and the interest rate. He also thinks that current disciples of functional finance will find Steuart surprisingly modern in his statements on government borrowing, revenues and expenditures.

The author makes no pretense of having written an exhaustive critique of Steuart's *Political Economy*. His purpose is to present a clear and unbiased survey in the hope of partially lifting the veil of obscurity from the work of a great pioneer. In the accomplishment of this objective he has made a distinct contribution. He might well have included in his book Schumpeter's statement in *Economic Doctrine and Method*, published in 1912: "when all is said, however, Steuart's work belongs to the greatest achievements in our field."

University of Virginia TIPTON R. SNAVELY

The American Economy. By Alvin H. Hansen. New York: McGraw-Hill Book Company, 1957. Pp. xv, 199. $5.00.

The American Economy is a part of the ten volume Economics Handbook

Series edited by Seymour E. Harris and the third volume of the series written by Professor Hansen. The books are intended, in the words of the editor, "to redress the balance between the energies spent on the creation of new ideas and on their dissemination." Professor Hansen has done an excellent job of presenting a clear and readable exposition of the case for "government planning for full employment." The book makes no pretense of being an impartial study of alternative economic programs, but is instead a persuasive defense of Professor Hansen's own views, most of which have been expressed in greater detail in his other works. The positive nature of this defense is indicated by Professor Hansen's definition of a conservative, on page 152, as a person who is ten years behind the times and his suggestion that the time lag for a professional economist is even longer. On page 156 the gold standard is disposed of by saying, "The gold standard was, in the nature of the case, doomed."

The theme of the book is given on page one of the first chapter, as follows: "There is a vast difference between the economic performance following the First World War and that following the Second World War. Stagnation followed the First; expansion and growth the Second. Why the difference?" In brief, Professor Hansen finds the answer in the emergence of a new type of economics and the development of the managed economy. On page 23 he states that: "The answer to stagnation is not the dogma of automatic adjustment. The answer is the vastly enlarged role of democratic governments—the assumption of responsibility for the maintenance of full employment."

The next chapter is a discussion of economic progress in this country since the 1930's. Professor Hansen believes that the American economy was remodeled as the result of the experience of the 1930's into a "mixed public-private economy" with a powerful role assigned to the government. He finds the key to our post-war progress in the maintenance of an "*adequate aggregate demand*" and spends several pages explaining how government and the welfare state have contributed to the maintenance of this demand.

Chapters Three and Four deal with monetary problems. In the third chapter the author depreciates the popular fear of inflation and warns against a blind adherence to a doctrine of price stability. He also states quite plainly that he has little belief in the effectiveness of interest rate changes as an economic control. Chapter Four is a discussion of post-war monetary problems and while Professor Hansen thinks that the record on the whole is good, he is highly critical of the exaggerated claims of the monetary theorists and equally suspicious of some of their arguments.

The next three chapters are a discussion of the Employment Act of 1946 which Professor Hansen calls the Magna Carta of economic planning. After an introductory chapter, he spends some time in discussing the program under the Truman and Eisenhower administrations. He feels that the Act has not as yet faced a real test (the book was published in April, 1957) and admits that many of the more desirable government policies have been the result of accident rather than design. As might be suspected, Professor Hansen approves of the objectives and purposes of the Employment Act.

Chapter Eight, entitled "Standards and Values in a Rich Society," is an excursion into the realm of philosophy and ethics. The chapter is basically a discussion of the weaknesses of the American economy and suggests a number of reforms or changes. The author is unwilling to rely on the market, but believes that reforms must be the result of social value judgements. He thinks that some of the objectives of the economy must be changed and advocates more education, more flower gardens, and less ugliness. In short, Professor Hansen argues for more emphasis on cultural rather than material values and ends the chapter by asking "But what does it profit a man if he gain the whole world but lose his own soul?"

Chapter Nine is a brief discussion and defense of Keynes. For Hansen, Keynes more than any other economist of the time has helped to rescue economics from its negative position and make it operational and functional.

The book will undoubtedly be used as supplementary reading for elementary and intermediate economics courses. Its chief value, however, would seem to lie in the field of adult education, and in courses designed to train public school teachers. In this area the book could serve as an excellent example of an important and influential segment of American economic thought.

University of Oklahoma JIM E. REESE

Introduction to Mathematical Economics. By D. W. Bushaw and R. W. Clower. Homewood, Ill.: Richard D. Irwin, 1957. Pp. xii, 345. $7.00.

This textbook is organized into two parts. Part I presents macroeconomic statics and dynamics for isolated and multiple markets, including not only a consideration of stock commodities, but a consideration of both flow and stock-flow commodities as well. The material on dynamics, presented by means of a development of seven mathematical models, includes an interesting discussion of stability conditions. This is followed by a treatment of the traditional micro-economic consumer and business behavior theory. The second part of the book is on mathematics, and contains brief discussions of the calculus, Taylor's series, determinants, quadratic forms, difference and differential equations, and a short chapter on maxima and minima. Short and informative suggestions for further reading appear at the end of the chapters in both parts of the book.

It is well known that some of the literature on mathematical economics is the work of persons who are primarily either mathematicians or economists, with the result that it sometimes either meets acceptable standards of mathematical rigor but leaves much to be desired as to the economics, or that it has an adequate economic discussion but a poor mathematical development. Happily, this book, being a collaboration of an economist (Clower) and a mathematician (Bushaw) is not of this kind. Indeed, two distinctive features of the book are the admirable way in which mathematics and economics have been blended, and the generally high level of clarity of the mathematical discussions. Also, the treatment of microeconomic price theory is the best this reviewer has seen. It features a fairly detailed discussion of the two variable case, then proceeds to the n variable case only after all the important interrelationships have been

presented in simpler form. Furthermore, Part II on mathematics is quite useful, and the material on difference equations is remarkably good.

The book is not without shortcomings, however. Some will not like the emphasis on flow and stock-flow commodities in the material on macroeconomics, and some will feel (quite rightly) that much of this material is written in a style that is very hard to follow (see for example the discussion on pages 10 through 12). Also, in view of the wide use of partial differentiation concepts in the first part of the book, it would appear that the mathematical discussion of this subject in Part II would consist of more than the several pages the authors have devoted to it. However, in this reviewer's opinion the major shortcoming of the book is its arrangement. Placing the economics first and the mathematics last has serious disadvantages. First, the careful statement of definitions and the framing of economic propositions in theorem form that appear in Part I clearly require that students have prior training in this type of thinking. Consider, as an example, the definition given on pages 30 and 31: "More generally, a system of r functional relations . . . involving n variables $u_1, \ldots, u_n$ and also m parameters $a_1, \ldots, a_m$ represents a statical system if for given admissible values of the parameters there exists at least one set of admissible values of the variables which satisfies the equations (9.1)." In order for a student at the intermediate level to assimilate a definition of this kind, prior exposure both to the relevant mathematics and to rigorous mathematical statement are necessary. Secondly, placing the mathematics last appears to suggest that a discussion of mathematical economics can proceed with the mathematics being "sandwiched in" at appropriate points. This is, of course, false. Finally, when in a discussion the reader is referred to later sections of the book for justifications or explanations rather than to earlier sections which have been covered beforehand, the discussion becomes disjointed and the references are considerably more distracting than they would be otherwise.

It should be emphasized, however, that the advantages of the book clearly outweigh the disadvantages, and that the authors have made available to the student of economic theory a valuable introductory source of information on mathematical economics.

University of Michigan W. Allen Spivey

Business Looks at Banks: A Study of Business Behavior. By George Katona. Ann Arbor, Mich.: University of Michigan Press, 1957. Pp. vi, 184. $5.00.

This monograph presents the findings of an interview survey made by Professor George Katona and his associates at the Survey Research Center of the University of Michigan. The purpose of the survey was to discover the attitudes of the executives of larger non-financial firms toward commercial banks. Quantitative and qualitative information pertaining to the financial practices of business firms was also obtained.

The interview survey was based on an extensive questionnaire, consisting of forty-nine questions; some with one or more subsidiary questions. The questions were designed to discover the banking and financial policies of large (over

nine million dollars net worth) and medium-sized (one to nine million dollars net worth) firms. How many primary and secondary banks does the firm use? How does it choose its banking connections? How are deposits distributed among the banks? When are funds invested rather than placed in the banks? To what extent does the firm use bank credit? Does the firm seek advice from bankers? Are banks competitive? How do banks differ from one another? Questions, such as these, were asked of the executives of 237 firms and their answers have provided a wealth of information on business behavior as related to financial practices.

Quantitatively, the results of the survey are presented in thirty-six tables. The tables follow the pattern of the questionnaire. These data are supplemented by qualitative data, in the form of quotations from business executives. The quotations were transcribed by the trained interviewers and serve to add greatly to an understanding of executive motivation—how executives reason. The wide variation in motivation, opinions and practices would seem to indicate that there is no single road to executive enterprise; although there is a tendency toward scientific operations.

Bankers will be happy to learn that most business firms are satisfied with their present banking connections and do not contemplate a change. While business firms do not consider interest costs important in making decisions or in seeking bank credit, they do regard banks as being competitive, but largely in terms of the services that are offered. Economists would probably prefer to think in terms of non-price competition or simply economic rivalry in such a situation.

Business firms seldom change banking connections, although they may, at times, add additional banks in order to facilitate expanded operations. This static relationship tends to be reinforced by the presence of a banker on the board of directors of a business firm or, more important, by the presence of a business executive on the board of directors of a bank. Inertia, too, is an important factor accounting for continuity.

Seventeen per cent of the large firms and twenty-three per cent of the medium-sized firms indicated that they had used no external funds since World War II. The reasons given were largely psychological in nature and related to attitudes of conservatism or to adverse ideas concerning indebtedness. As one respondent stated, "We don't want worries around here." Most firms, however, do use external funds, frequently as a routine matter. While banks are the most important source of external funds, other sources are also utilized, particularly by the larger firms. The principal complaint against banks as lenders was that they desire to loan only for short periods of time. In making their financial plans, most firms do not separate their short-term and long-term credit requirements; they simply need money to carry out their present plans. In other words, they expect banks to provide funds for investment as well as for working capital purposes.

In the concluding section, Chapter Eleven, Katona and his associates consider some of the implications of the study in relation to monetary policy. It is sug-

gested that investment decisions appear to be made independently of the question of financing costs and that tax considerations further reduce the importance of interest rates. Bank credit is also favored by most executives over the alternative of raising funds through the sale of stock. The fear that loans will not be renewed, due to monetary stringency, seems to be more effective in restraining borrowing than the higher cost of credit. Still, the survey does not reveal, as the cover jacket suggests, "the real effect on borrowing of raising or lowering interest rates." In fact, the author and his associates cautiously state, "Careful studies of investment decisions, conducted under different circumstances, are required to answer the question about the efficacy of monetary policy."

There is much in this monograph that is of interest to bankers, economists and statisticians. Bankers will find information that should enable them to better evaluate the policies of their own institutions. Economists will be interested in this study for the light it sheds on economic motivation. Statisticians should find the questionnaire, the discussion of sampling technique and the method of presentation of substantial interest. This study is an important contribution to the study of business behavior, as it relates to the making of financial decisions.

University of Kentucky JOHN T. MASTEN

Capital in Agriculture: Its Formation and Financing Since 1870. By Alvin S. Tostlebe. Princeton, N. J.: Princeton University Press, 1957. Pp. ix, 232. $6.00.

Dr. Tostlebe's book is part of a larger study concerning long-term trends and prospects in capital formation and financing in the principal capital-using sectors of the American economy. The study, initiated by the National Bureau of Economic Research in 1950, considers the following sectors: mining, manufacturing, the public utilities, residential real estate, governments, and agriculture. This volume deals with the latter sector.

While the work contains penetrating and incisive analyses, to many economists its chief value probably lies in the provision of the basic agricultural data (in current and 1910–14 prices) covering an eighty-year period from 1870 to 1950. Dr. Tostlebe not only brought together for the first time consistent time series on physical agricultural capital and its components for the United States and major farm regions. In his effort to analyze differential rates of capital formation over time as well as among regions, he also provided other basic time series data (chiefly, real farm output and farm labor) which, because of their comparability and great detail, excel anything heretofore available. These data will certainly be used by many analysts for years to come. Those of us who have had some experience with agricultural data can well appreciate Dr. Tostlebe's contribution.

Perhaps the most noteworthy of Dr. Tostlebe's many interesting findings is the following: From 1870 to 1910, gross farm output in constant 1910–14 prices increased by $4.2 billion or 168 per cent. Meanwhile, farm labor rose by 5 million or 68 per cent; physical farm capital grew by $25.6 billion or 129 per cent. From 1910 to 1950, output rose even more in absolute terms (by $5.1 billion),

though less rapidly in relative terms (by 76 per cent). But this increase was achieved despite a sharp drop in farm labor back to its 1870 level of 6.9 million, offset only by a small increase in farm capital ($8.3 billion or 18 per cent). To remove the influence of increased contribution of other industries to agricultural production, the author calculated the value of output net after intermediate products. In these terms, the increase in output (40 per cent) was more modest during 1910–50. Even so, the increase cannot be explained by what happened to the farm labor force and the capital stock in that period. This unexplained increment Dr. Tostlebe attributes to changes in technology.

This interpretation is essentially correct. One wonders, however, whether certain other factors ought not to be mentioned. Dr. Tostlebe's census-based farm labor force estimates represent not so much labor input as the number of persons engaged in agriculture, *in varying degrees of intensity*, during the census week. If the intensity with which the typical farm worker engaged in agriculture has increased in recent decades, as was probably the case, part of the observed decreases in labor force is more apparent than real. Failure to recognize this factor tends to overplay the importance of technology. (In making regional comparisons, one should also realize that the extent to which the census week is representative of the employment situation throughout the census year varies among regions with their type of farming.) Likewise, failure to recognize increased educational attainment (both in terms of formal schooling and agricultural vocational training under the extension system) of the farm people and its relationship to labor productivity and managerial efficiency adds to the mystery that already surrounds technology. A farmer today is more productive not only because he is aided by more and better capital resources and improved techniques, but also because he is a better farmer. Finally, Dr. Tostlebe's exclusion of feed and other purchased current inputs from his capital accounts (although stored crops, mostly farm-grown feed, are so included) tends to exaggerate the impression that output is increasing with little or no increase in capital. The use of output net after intermediate products in place of gross output only partly corrects this impression, since these inputs add more to the product than to costs even if the rates of returns and costs are equated at the margin. Although increased use of purchased intermediate products may be charged off to technology, failure to bring this out explicitly again hampers our understanding of the role played by technology.

Aided, as he was, not by a crystal ball but by powerful trends revealed by his painstakingly-assembled data, Dr. Tostlebe is confident agriculture's future will be bright. He foresees a fair rate of capital formation, some further drop in farm labor, and continued technological advancements. All this adds up to substantial increases in agricultural labor productivity. We hope he is right.

Vanderbilt University ANTHONY M. TANG

The American Business System: A Historical Perspective, 1900–1955. By Thomas C. Cochran. Cambridge, Mass.: Harvard University Press, 1957. Pp. v, 227. $4.75.

This book is an unquestionable contribution to knowledge. Professor Cochran

expounds in historical perspective the big changes that took place in American business methods and outlook, first in the years 1900–1930 and second in the years 1930–1955. In 1900 Free Enterprise was still dominant with its creeds and outlook. Managerial enterprise was only slowly invading one branch or another, with its own creeds, its professional directors, its long range outlook and its social status, and community responsibilities. By 1930 the "big change" was practically complete. Indeed, it had run its course, and was preparing the way for the next era.

Technology had taken over from handwork. Mass production on the assembly line was the cause of the greatly increased output—the relentless flow of innovation replaced individual inventiveness and smartness. Scientifically trained engineers, production and personnel managers, technicians and chemists were coming more and more into positions of authority.

These developments led to an unprecedented need for capital investment, which pushed the investment bankers into a powerful, if not controlling, position. Professor Cochran thinks that the American public, including the leaders "cannot be absolved from whatever blame attaches to being caught in the general wave of optimism of the late twenties" (p. 92), and quotes President Wiggins of the Chase Bank that "there was a great deal of atmosphere." The recklessness of financial structures of course spread far beyond the leaders. He thinks the leaders of Wall Street had far less power than was attributed to them.

"It appears in retrospect to have been a time when the people of the country temporarily lost their sane judgment," but continues that perhaps not more than four millions out of fifty millions had any stock market holdings, and of these only half a million had margin accounts (p. 98).

Thus was ushered in the new era.

Part II, 1930–1955

This era is of such recent date that everyone over age 50 remembers vividly the sequence of events. This has been written up chronologically many times, so that there is small opportunity for Professor Cochran to make an original contribution.

The ups and downs of depression, World War II and boom are each set forth in order.

He does, however, make a number of astute and perceptive comments of which the following are samples:

(1) "The generally high-level prosperity of 1950 to 1955, therefore, was inherently no more stable than that of the late twenties, perhaps less so. To fluctuations produced by the guesses of entrepreneurs, including farmers, had now been added the uncertainties of consumer forecasts" (p. 121).

(2) "The transition from this high point of public belief in the American business system to an attitude of greater distrust of both business honesty and ability than had characterized any previous period was cataclysmic" (p. 140).

(3) "Fundamentally, America's businessmen, lulled by confidence in automatic economic adjustment, were running an industrial machine whose intricacies they did not understand" (p. 191).

(4) "Judged by the standards of 1800, American society in 1900 was already bureaucratic, but apparently this fact did not bother people at the time" (p. 192).

(5) "The very success of American business placed it in a position for which it never consciously prepared, and for which it was not especially fitted. For this purpose at least two adjustments were required: business must fit physically and economically into a state of military strength; and it must find its particular role in the attitudes and beliefs associated with the American world mission" (p. 202).

This is a book that clarifies how we arrived at where we are, and where we are.

Beaufort, S. C. OSWALD KNAUTH

High-Talent Manpower for Science and Industry. By J. Douglas Brown and Frederick Harbison. Princeton, N. J.: Industrial Relations Center, Princeton University, 1957. Pp. 97. $3.00.

Toward the end of the last century an English social theorist, W. H. Malloch, wrote extensively in support of the thesis that cultural and economic progress were almost exclusively due to the great men of a society. The remainder of the people were the richly rewarded agents who executed the plans of the great minds. The argument was highly incompatible with the trend toward socialism that dominated the times, and Malloch encountered neglect except on the occasions when he received abuse. It is interesting that Brown and Harbison advance substantially the same thesis. Their essays discuss the role and the methods of encouraging the training of highly talented individuals in the United States and in the underdeveloped economies, respectively.

Hardly anyone—presumably not Brown or Harbison and certainly not the reviewer—knows much about the conditions favorable to the exercise of premier class creativity. At most we know a little about the ways to suppress it, and in the balanced discussions in the book such policies are warned against; this is perhaps the most useful service the little volume performs.

The authors have made no special study of the problem: they set down only the reflections of experienced and intelligent men. And on only three points am I moved to raise a question.

First, they assume a shortage of high talent, without defining a shortage. Does this mean more than that (1) in a finite sample from a normal distribution there is a "shortage" of observations three standard deviations above the mean, or (2) more of a good thing is better than less. Economists have a responsibility for avoiding the ambiguity and hysteria which are rampant on this subject.

Second, the authors give no canons of proper allocation of highly talented young people among fields, and yet recommend policies to affect the distribution. Corporations are instructed on how to lure talented men from universities, and universities are instructed on how to retain them. The real social problem, I should think, is to devise such rewards outside the natural science and industrial fields that all our best minds will not be swallowed up by electronics for the army and the kitchen.

Finally, Harbison's pleas for an aristocratic educational system in underdevel-

oped economies is economically persuasive, and of course this is the policy that the Western world followed under similar conditions. But his suggestion of deliberate orientation of talent to immediately productive callings has no historical support, and I suspect that such an investment program—which will often be followed—will be still another reason for the failures of developmental programs: it is difficult to believe that a society of technicians would display durable progress, even in technical matters.

University of Chicago GEORGE J. STIGLER

The Regulation of Rail-Motor Rate Competition. By Ernest W. Williams, Jr. New York: Harper & Brothers, 1958. Pp. ix, 247. $4.50.

Sponsors of the Transportation Act of 1920 thought this legislation would solve the railroad regulatory problem for all time. Then came the trucks. From an estimated 4 per cent of total intercity ton-miles in 1929 (compared with 73 per cent carried by rail), truck traffic volume climbed to 13 per cent of rail volume by 1940 and to well over one-third of rail volume by the mid-1950's. And, as trucks tend to specialize in high quality, small lot, short haul traffic, their total revenues are equal to or greater than that of the railroads. This truck competition, despite overall increases in traffic volume, has affected rail carriers adversely.

The Interstate Commerce Commission has had regulatory control over motor common carriers, and, in part, over motor contract carriers, since 1935. Professor William's monograph analyzes one aspect of this control, namely the regulation of rail and motor rate competition, in an attempt to evaluate the role of the Commission in the rail-truck competitive struggle, and to throw some light on the generally unsatisfactory condition of domestic common carrier transport.

After setting up the problem, the author proceeds with a detailed analysis of rail and motor carrier rate cases brought before the Commission by these respective carrier agencies, then moves to cases involving both types of carrier. Specifically, he devotes two chapters to rail Investigation and Suspension cases, one to fourth-section situations, one to motor carrier I and S cases, one to the prescription of motor carrier minimums, and one to relationships between truck and rail rates. This analysis, the body of the study, cites approximately 450 I.C.C. and M.C.C. cases, plus several court decisions, mostly from the period 1936 to 1954. Its comprehensive coverage and painstaking detail makes this study clearly the definitive one in its field. Like many scholarly works, though, it is likely to be a bit tedious to the non-specialist. Also, its usefulness could be increased by a subject-matter or a commodity index.

The author concludes that the Commission is neither "rail minded" nor "motor minded." Instead, limited by vague legislation and the lack of specific court interpretation, its greatest handicap is its own negative attitude. It does not consider itself a policy forming body, and has done little to advise Congress concerning what policies should be enacted. In direct rate regulation its most noteworthy contribution has been "the establishment of a fluctuating and ill-defined floor for the competition" (p. 206) which is designed to permit meeting

rather than beating competition. Keeping everyone in business, however, neither preserves inherent advantages, facilitates economic traffic division and service coordination, nor reduces the nation's transport bill. More consideration might be given to the elimination of some higher-cost competitors.

This reviewer's major criticism is that the author exercises too much scholarly restrain in his conclusions. If the present National Transportation Policy and Interstate Commerce Commission had existed a century ago, we today would be enjoying the "inherent advantages" of stage coaches and the Pony Express!

Texas Technological College ROY J. SAMPSON

Marketing Behavior and Executive Action. By Wroe Alderson. Homewood, Ill.: Richard D. Irwin, 1957. Pp. viii, 487. $7.00.

Wroe Alderson, senior partner in Alderson and Sessions, has presented his theory of market behavior in many speeches and lectures over a considerable time. Here between the covers of a single book are presented his ideas as crystallized throughout a lifetime of searching and thinking.

The book is divided into three parts. Part I is devoted to the historical development of marketing theory and its relationship to the behavioral sciences. Part II, the bulk of the book, moves through the theory of market behavior as seen by Alderson, while Part III is concerned with the "principles of action which have general validity in the management of marketing operations." According to the author in his preface, this part is the "culmination of the whole book for either the student or the executive." Since the book is written from the functional point of view, this would be true, since, again according to Alderson, "the final purpose of theory in marketing is to achieve a better understanding of action and to make it more effective." The author even suggests that the executive or student might wish to start with Part III and cover the book in reverse order.

Part II deals with the marketing processes, the evolution of market structures to serve the marketing functions, and the problem solving within the market place by both buyers and sellers to achieve satisfactions. This presents a picture of the environment in which the marketing executive must make his decisions.

This attempt to approach in an orderly fashion the manner in which the marketing decisions should be made should prove of interest to the student, whether he be of marketing or economics or social science. The approach through the behavioral sciences into the hard core of the book makes a ground-work for the acceptance of the principles which are present in the dynamics of marketing organization.

Written in a readable style, the book follows a closely-knit structure. To aid the reader, a summary is presented at the beginning of each chapter. This makes possible the refreshing of one's thinking at a later date. A series of selected references is given at the end of each chapter. Although not strictly annotated, comments are made by the author on these references, as well as on other materials which the student may wish to pursue.

It is believed that this book will prove to be one of the landmarks in the de-

velopment of marketing theory and is recommended to all who have even a peripheral interest in this field.

University of Alabama DONALD F. MULVIHILL

Problems in the International Comparison of Economic Accounts. Studies in Income and Wealth, Volume Twenty. By the Conference on Research in Income and Wealth, John W. Kendrick (ed.). Princeton, N. J.: Princeton University Press for the National Bureau of Economic Research, 1957. Pp. x, 406. $8.00.

Interest in national economic accounts is as old as the nation state. In the seventeenth century Petty and King compiled their political arithmetic to measure and compare the wealth of nations. More recently, national income and related measures have become a well-nigh universal means of analyzing the economic development of nations. This growth in the domestic use of national accounts has been accompanied by corresponding efforts to achieve greater comparability of international economic statistics. These efforts have led to the present volume which is a record of proceedings on the comparability of national accounts, held in 1954 by the Conference on Research in Income and Wealth.

Morris Copeland, in his opening paper on *The Feasibility of a Standard Comprehensive System of Social Accounts*, traces the steps taken on an intergovernmental level to set up uniform concepts and methodology for the various national accounts. Copeland poses three fundamental questions: (1) Can a single standard, general purpose scheme of sectoring an economy be devised that will reconcile the different accounting systems now in use? (2) Do different countries require different systems because of national differences in basic institutional structures? (3) Can economic accounting become more homogeneous by incorporating information on national wealth into the present body of transaction accounts? Copeland's careful answers to the questions posed will become classic contributions to economic accounting, as have his path-breaking studies in domestic money flows.

Problems in the international comparison of economic accounts are paralleled by problems arising in the study of different institutional sectors within the domestic economy. Gerhard Colm re-examines some *controversial issues in the government sector* with the objective of arriving at formulations that will be most appropriate for international as well as intertemporal comparison. National economic accounts are basically designed to summarize market transactions. Most government services are not sold on the market, as it is the very role of government agencies to perform functions which cannot adequately be priced by the market. The resultant problems are lucidly summarized by Colm whose thoughtful comments reflect his pioneering efforts to use economic accounting as a guide for fiscal policy.

National accounts and their comparisons had their historical origin in the attempt of the mercantilists, not only to compare national wealth, but also to account for its movements through a balance of trade. Herbert Woolley presents *a system of international transaction accounts* for the year 1951. Such a world trade matrix opens the vision of an interlocking set of economic accounts for the nations of the world.

The measurement of differences in price levels has received attention from more eminent scholars than has any other branch of economic statistics. Jevons, Marshall, Edgeworth, Mitchell, and Keynes are among the many writers on the form and construction of price indexes. Yet, perhaps just because of their general interest, price indexes compiled today do not differ essentially from those constructed in the early part of the century, though the ever growing complexity of goods in the market does not permit the simple association between changes in prices and changes in the value of money that originated with Jevons. These problems, disturbing even in the domestic treatment of monetary accounts, are multiplied in any attempt to measure comparative purchasing power among countries with widely different market structures. Drawing on a wealth of experience from their price work in the United States Department of Labor, Dorothy Brady and Abner Hurwitz offer important observations on *measuring comparative purchasing power* of national currencies.

In a paper made more interesting by generous allusion to anthropological materials, Irvin Kravis attempts "to find a concept of economic activity that will be useful in comparing national incomes in two situations distinguished by widely different social and economic institutions." His paper on *the scope of economic activity in international income comparisons* proceeds to develop some rules Kravis finds helpful for defining the content of national income in different societies.

The above summary gives but a scant impression of the many stimulating contributions contained in the volume under review which fully satisfies the high expectations associated with all studies sponsored by the Conference on Research in Income and Wealth. Each paper is supplemented by penetrating comments of distinguished critics. The concluding comment of the volume contains a forceful warning against the dangers associated with the promiscuous use of international income comparisons by a gullible public. Jacob Viner is alarmed about the international currency of "dangerous counterfeits of knowledge" and refuses to accept the compromises offered by those engaged in making international comparisons of income estimates. Yet, the very existence of the present volume, full of critical self-examination by the practitioners of economic accounting, should point the way toward a more discriminating interpretation of these estimates the world over and thus enhance their practical usefulness for economic analysis and policy decisions.

Washington University WERNER HOCHWALD

The Economics of Under-Developed Countries. By P. T. Bauer and B. S. Yamey. London: James Nisbet & Co. and Cambridge University Press, 1957. Pp. xiii, 271. 10s 6d.

The purpose of this book as indicated by the authors is to bring economic analysis to bear on certain aspects of economic development of under-developed countries and to analyze some of the major issues of economic policy. The authors do not seek to provide a theory of development nor a set of proposals for governmental action. Rather than providing a positive, integrated approach the authors are mainly interested in testing various theses regarding the develop-

ment process and its promotion. Since they favor minimizing government controls and planning, much of their concern is with showing the pitfalls of government activity.

The most significant contribution of this book lies in a critical examination (and rejection) of a number of widely accepted propositions concerning development. Space permits only a listing of a few of these propositions:

1. Economic progress is correlated with a shift of occupational distribution from primary to secondary and tertiary employment.
2. Development is a function of capital accumulation as determined by the capital-output ratio.
3. The international demonstration effect (the tendency of the people in the underdeveloped countries to emulate the consumption standards of the high income countries) makes a high rate of voluntary savings in the less developed countries almost impossible.
4. Industrialization is the key to higher income levels.
5. Development policy should promote balanced industrial growth.

The authors regard development as a widening of peoples' access to alternatives. Except for maintaining law and order and of dealing with special problems such as land reform, the role of government is to be minimized. Government expenditures should be directed very largely to those which yield "indiscriminate benefits."

In arguing against government controls and government-sponsored projects, the authors state that people in underdeveloped countries are aware of economic alternatives and take advantage of them; they respond to changes in relative prices and rewards; that the price system provides the best means of allocating resources. They maintain that compulsory saving is unnecessary; that there is no necessary incompatibility with the demand for higher levels of living provided there are opportunities for free enterprise to expand output.

While the authors have made a significant contribution in challenging some of the shibboleths which are found almost universally in development literature and have rightly criticized excessive economic nationalism, they have failed to indicate in a positive and comprehensive way the appropriate role of government policy in underdeveloped countries. Much of the literature on underdeveloped countries certainly minimizes the role of the price mechanism and indeed one gets the impression that the price system and private initiative are of little relevance for the problems of underdeveloped countries. On the other hand, governments in these countries must play a major role in providing economic and social overhead capital which for one reason or another cannot be provided by private industry. There is also the very important role of credit to local industry which the authors have not dealt with to any degree. Finally, the authors have tended to overlook the balance of payments problem which is especially acute for countries seeking development under forced draft. Even if the role of government is to be a relatively restricted one, there is considerable room for overall planning and direction by governmental agencies.

University of Oregon RAYMOND F. MIKESELL

Economic Analysis and Policy in Underdeveloped Countries. By P. T. Bauer. Durham, N. C.: Duke University Press, 1957. Pp. xiii, 145. $3.00.

Economic Backwardness and Economic Growth: Studies in the Theory of Economic Development. By Harvey Leibenstein. New York: John Wiley & Sons, 1957. Pp. ix, 295. $6.75.

These two books are worthy additions to the developing body of studies in the field of economic development. While both are concerned primarily with improving understanding of the problem of promoting economic growth in backward areas, they differ in many questions of policy. Bauer's little book, stemming from lectures delivered to the Commonwealth Studies Center at Duke University, delves into the relevancy of economic analysis to the problems of underdeveloped countries, with some comment on policy ramifications. Leibenstein provides a series of essays in an attempt to evolve a general theory of economic development which "is not inconsistent with the commonly observed characteristics of backward economies."

Bauer stresses the applicability of basic economic propositions to underdeveloped areas despite differences in the institutional frameworks of developed and underdeveloped countries, citing many examples to verify this point. The role of direct observation in developing economic generalizations is considered invaluable by Bauer because of the absence of contrived experiments, the limitations of statistics, and the difficulty of quantifying many variables. Bauer points out that while the level of economic attainment and social development in African and Asian countries is generally low, many of these areas have experienced significant economic growth in the past few decades, particularly those in contact with personnel, ideas, and capital from the more advanced economies. To a considerable degree growth in many of these countries has resulted from increased production of cash agricultural crops, which Bauer defends as desirable capital formation as contrasted to reliance on industrialization. Such a technique of development refutes the thesis that since the underdeveloped countries are too poor to invest they are caught in a vicious circle of poverty. It also helps to foster and encourage the emergence of a trading class, so necessary for further development of an exchange economy. The dangers of the appearance of restrictive tendencies in underdeveloped countries which produce adverse effects on economic growth are also stressed.

The type of development which has occurred in many of the underdeveloped countries cannot adequately be measured by the conventional national income estimates in Bauer's judgment. He regards the extension of the range of choice of the people as the principal objective of economic development and, in effect, uses this criterion as a basis for attacking the compulsory savings approach to economic development. In essence, Bauer's argument is for natural development through agriculture rather than through industrialization fostered by the government, for private enterprise rather than government ownership.

Leibenstein utilizes the abstract, non-empirical and non-historic approach to build up a thesis about growth in backward areas. He accepts the per capita

income approach to an index of economic development. Backward economies are considered to be in an equilibrium state of "quasi-stability," and the forces that tend to raise per capita income set in motion forces that have a depressing effect. The vicious circle of poverty can be broken best by a critical minimum effort which sets forces in motion which will produce more stimulating than depressing effects to guide the economy on the path of steady growth. Leibenstein would concentrate on three growth-contributing activities: the creation of entrepreneurship, the expansion of productive skills, and the increase in productive knowledge. Emphasis is placed on the demographic aspects of per capita income growth. Leibenstein indicates that if the critical minimum effort is made and per capita income increases at a rapid enough rate, the rate of induced population growth will be low enough so that potential income gains are not absorbed. The investment needed to create momentum need not necessarily be made in one injection since several smaller doses may accomplish the same objective. The conclusion is reached that investment in industry may be more desirable than investment in agriculture and that the marginal principle as stated by Leibenstein should govern the allocation of investment funds. The analysis is supported by interesting and original diagrammatic presentations.

Leibenstein is at cross purposes with Bauer as far as an index of development is concerned and as to the relative emphasis on agriculture and industry in the development effort. His critical minimum effort thesis appears sound, but it is questionable as to whether enough resources are available in a typical backward country to make such an effort feasible. In addition, his analysis lacks the substance provided by empirical studies such as those cited by Bauer. Neither analysis provides a comprehensive approach to govern development planners but they present ideas stemming from empirical and abstract reasoning of value in making judgments.

These essays are thought-provoking and worthy of perusal. They will be useful as background reading in economic development courses and for the general reader concerned with the problem of economic growth.

University of South Carolina JAMES A. MORRIS

Economic Planning by Programme and Control in Great Britain. By Gilbert Walker. New York: Macmillan Company, 1957. Pp. v, 175. $3.75.

This book represents an attempt to summarize the origins and techniques of economic planning in Great Britain. Its central focus is upon the Labor Government's period in office, from 1945 to 1951. This is a subject and a period which have aroused strong emotions from earlier, partisan commentators, and it is to Professor Walker's credit that this slim volume is, by refreshing contrast, dispassionate and unmarred by tendentiousness.

The book, which the author tells us originated in a series of lectures delivered during a summer session at Harvard, opens with a chapter devoted to the historical background of economic planning in England and a second chapter which discusses "The Theoretical and Statistical Foundations." The latter chapter, in spite of its rather imposing and promising title, is no more than an elementary

statement of the basic tools of national income analysis and measurement, and the book would seem to suffer very little by its omission.

In the six remaining chapters the author describes the emergence of the central planning machinery during World War II and traces the application of this machinery to the radically different environment of the post-war period. There is much in these chapters that is useful. Chapter 3, especially, on "The Mobilisation of Resources in War," brings together material presently available only in a large (and still growing) number of official Civil Histories of the Second World War.

As an historical account of the Labor Government's post-war experiences in planning the book suffers from the author's attempt to compress a unitary treatment of the period into a few short chapters. The nature and severity of the problems confronted by the Government, as well as the techniques for dealing with them, all changed rather drastically within the six-year period covered by the book. In many respects, for example, the winter of 1947–1948 may be regarded as a decisive turning point, and statements applicable to 1948 and after are entirely inappropriate when intended to apply to the immediate post-war years as well. The author's attempt to generalize for the entire period necessarily slurs over these changes in a manner which is apt, at times, to be confusing and misleading. To those seeking a general introductory account to the period and its problems this may not be a major blemish; to the more specialized reader looking for guidance on specific issues, programs or policies, it must be regarded as a serious deficiency.

There is, furthermore, a lamentable lack of clarity and precision in the author's conception of "economic planning"—at least as he has communicated this conception to the reader. In some places (Chapter 1 and p. 58) the term seems to refer merely to Keynesian anti-cyclical policies plus "a scheme . . . for the compulsory insurance of all citizens against the risks arising from the economic instabilities to which Western industrial democracies seem to be prone"; elsewhere, and more generally, it seems to refer indiscriminately to the whole gamut of governmental interferences with, and modifications of, the free working of the price mechanism.

In spite of the fact that the organization of the latter part of the book makes for a rather fragmented and disjointed discussion, Professor Walker's comments and observations on the complex post-war system of allocations, licenses, permits, etc., are, at many points, astute and discerning—for example, in his treatment of the difficulties inherent in a situation where the administrators of a government control scheme are recruited from among the leadership of the industry to be controlled. Professor Walker is clearly aware of, and ably discusses, the difficulties and rigidities involved in the operation of such direct controls. However, a final judgment of their success or failure implies consideration of, and comparison with, the consequences of an alternative policy. When all the limitations of such direct controls have been listed, one is still confronted with the fact that Britain's post-war recovery was not a totally unimpressive performance. By comparison with the post World War I experience at least, when

free markets were re-established almost immediately after the armistice, the overall recovery in the six years after 1945 was hardly a contemptible one. It is difficult to believe that the difference was not due, at least in part, to the temporary retention of the admittedly clumsy and highly imperfect wartime controls. This is not so much a criticism of Professor Walker's book as it is an objection to the tendency, which Professor Walker shares with other economists, of employing standards of perfection in situations where the real choice lies among alternative policies of varying degrees of imperfection.

University of Pennsylvania NATHAN ROSENBERG

The Economics of Communist Eastern Europe. By Nicolas Spulber. Cambridge, Mass.: Technology Press, and New York: John Wiley & Sons, 1957. Pp. xxviii, 525. $12.50.

This study covers the national economies of Czecho-Slovakia, Poland, Hungary, Rumania, Bulgaria and Jugo-Slavia. East Germany and Albania are not included. The periods are 1944–45 to 1948–49 and 1948–49 to as nearly the time of publication as the author could obtain data.

During the first of these periods, the author points out that although all these countries were in the Soviet orbit, nationalization was not complete and indeed had not been attempted for all sectors of the economy. The different national economies during the first period presented a "complicated interweaving of various types of social-economic structures," including those of capitalism. All this was changed after 1948–49 when the Soviet government imposed on these countries comprehensive nationalization of industry, a drive for the collectivization of agriculture, a developmental program and economic planning on an all-round basis. The author points out that, in consequence, a much higher degree of uniformity in the economies of the satellite countries now developed than had at first been true. Nevertheless there continued to be important differences in the economic development of Czecho-Slovakia, Poland and Jugo-Slavia, as former allies from that of Hungary, Romania and Bulgaria, the former enemy countries. After Tito broke with Stalin Jugo-Slavia represented a special case. The author assesses the relative weight of reparations and other economic contributions exacted by Soviet Russia from the satellite countries compared with economic assistance furnished.

The purposes of the study are stated as an examination of the structural changes in the economies of Eastern Europe during the two periods referred to above, their performance under Communist planning and their prospective development. The author has been admirably successful in fulfilling these purposes. There is a wealth of data on income, investment, foreign trade, agriculture and industry, drawn from available sources, most of which are official. The author is able to make use of documentation in the languages of the countries with which he deals.

The author is confronted by the problem with which everyone working with data in the Soviet field must cope, that of whether official data are reliable enough to be of any use. The author's answer agrees with those of almost every-

one else in the field that the data are to be used with caution and with reservations but that they are usable. The author points out that the assumption of "two sets of books," one false for "outsiders" and one true for officials is simply untenable. Nevertheless, the author is left with the kind of dilemma which confronts us all when he points out on page 480 "In 1953 per capita income rose in Czecho-Slovakia, Poland and Romania to double the prewar level . . ." and on the same page notes that "Thus it was openly recognized in Poland after the June 1956 outbursts in Poznan that the average of real wages have been lowered for many categories of workers during the first long-term plan." The author points out the discrepancy and notes the rather feeble efforts of Polish officials to account for this.

This study is a substantial contribution and is a "must" for all libraries which attempt to cover this field.

Duke University CALVIN B. HOOVER

French Banking Structure and Credit Policy. By J. S. G. Wilson. Cambridge, Mass.: Harvard University Press, 1957. Pp. vii, 453. $8.50.

Mr. J. S. G. Wilson, who is Reader in Economics, with special reference to Money and Banking, in the University of London, deserves warm congratulations for this valuable first full-length monograph in English on French banking arrangements and credit policies since 1945. Until now there were available in English just a few brief studies on the subject—M. Henry Germain-Martin's chapter on "France" in B. H. Beckhart's (editor) *Banking Systems* and Wilson's own two articles (which for inexplicable reasons are not mentioned in the book) on "French deposit banks and *banques d'affaires*" and on "Monetary Policy in France" in the December 1954 and March 1955 issues respectively of the *Banca Nazionale del Lavoro Quarterly Review*. Wilson's volume, written in a lucid and pleasant style, is not only the product of extensive research (although it provides only a brief "select bibliography"), but is based largely on first-hand study of French banking "both in Paris and in provincial centers," as well as on correspondence with "all sections of the French banking community." As such, it is a major contribution to the literature, and will be of interest to university teachers and students, to practicing bankers, and to others actively concerned with French economic and financial problems.

Wilson's work is divided into two parts. Part I (which comprises considerably more than half of the text) is a thorough and detailed discussion of the structure and functions of the several classes of French banking institutions that make up the money market. Part II traces the development of French central banking arrangements and of the present constitution of the regulatory authority concerned with banking practice and credit policies, and describes the comprehensive mechanism of credit control that has been built up since the war.

Of the changes and innovations in French banking since 1945, some, as the nationalization of the Bank of France (the central bank) and the four largest deposit banks which "was prompted by frankly political motives," "have tended to be *de jure* rather than *de facto*." Other, especially the control of banking and

credit, have been substantive. Wilson makes clear that "Credit control and the regulation of banking activity generally was a surer means of effecting the 'nationalisation of credit' than State-ownership of the leading banks." In the postwar banking reforms, the French Government considered this a prerequisite for freeing "the State from the fetters of private finance." It has indeed made possible the protection of depositors and ensured compliance with the government's monetary policy.

The new institutional framework for achieving these objectives was set up in December 1945. Whereas before the war the Bank of France was the sole regulator of money and credit (although it did not control the banking system), "Three separate authorities are now responsible for the regulation of the banking system, though effective liaisons are maintained between them and, in fact, there has been very little overlapping. The National Credit Council set up in 1945 is broadly responsible for general policy, and advises the appropriate Minister (usually the Minister of Finance) on all relevant matters, and the Banking Control Commission first established in 1941 is generally responsible for the supervision of the various groups of banks, on which it may impose sanctions if its requirements are not met. In certain matters, it also serves as an appeal tribunal. The Bank of France acts as the executive arm of the National Credit Council in implementing credit policy and, in this capacity, possesses extensive powers to regulate both the volume of credit and the direction of the lending."

From September 1948, when the earlier reliance of the central bank on qualitative or selective credit controls was abandoned, the monetary authorities in France developed a comprehensive system of credit control techniques which materially increased the power and influence of the Bank of France. These were quantitative instruments, comprising a system of credit "ceilings" (*plafonds*), or maximum limits on rediscounts at the Bank of France allowed to each bank, and a *plancher* (or "floor") for Treasury bill holdings of the banks, with provision for a relative increase or decrease in these holdings in accordance with changes in the level of deposits. The selective controls became an adjunct to the quantitative credit measures, however. From the Fall of 1951 the quantitative weapons were strengthened by the use of a more effective central bank discount rate. It is Wilson's judgement that "When the several techniques were operated together, it was possible to achieve almost all that it was reasonable to expect from credit control as such." But, as he correctly emphasizes, "no economy can be kept on an even keel by central bank action alone and a maximum contribution depends on the implementation of an appropriate and consistent fiscal and economic programme .... Effective central bank action necessarily depends on the maintenance of a favourable environment and for this the Government itself must accept the major responsibility."

Washington, D. C. ARTHUR LEON HORNIKER

Aspectos monetarios de las economías latinoamericanas, 1956. Mexico, D. F.: Centro de Estudios Monetarios Latinoamericanos, 1957. Pp. 211.

This is a staff report of the Latin American Monetary Studies Center, although

the preface identifies Dr. Theodore A. Sumberg as the principal author. Continued financial support from the Rockefeller Foundation encourages the Center to promise similar surveys for later years.

Much space is devoted to bare chronicles of financial legislation in the twenty countries of Latin America. Numerous tables present selected monetary and banking statistics for most of the area. But the work is much more than a repertory of facts and figures. Chapters on banking, foreign exchange, and monetary policy are critical as well as informative. The authors' interest centers on the prospects for adapting monetary and fiscal measures to the goals of economic development. Formidable obstacles are found in such factors as the Latin propensity to keep foreign-exchange earnings in dollar deposits abroad, the ineffectiveness of high interest and rediscount rates under chronic inflation, and the impotency of credit controls when the government and state enterprises are the most insistent borrowers. But the experience of some countries, notably Mexico, suggests ways in which monetary policy may become an effective instrument for channelling resources into uses most productive of increases in national income.

Duke University ROBERT S. SMITH

Economic Opinion and Policy in Ceylon. By Henry M. Oliver, Jr. Durham, N. C.: Duke University Press, 1957. Pp. xiii, 145. $3.50.

Ceylon is an island located off the southern tip of India. Its north-south axis is approximately 300 miles long and it is 150 miles wide. The population is predominantly Singhalese, but there is a large Tamil minority and a sprinkling of Moors, Malays and Burghers. The religion of the Singhalese is Buddhist, that of the Tamils is Hindi. Christianity and Mohammedanism are small minority groups. Politically the island has been ruled in turn by the Portuguese, the Dutch and the English. Ceylon attained independence in 1946.

The principal resources of the country are tea, rubber, coconuts and rice; the first three being exported, the last one being consumed locally. The large tea and rubber estates are mostly foreign owned. The standard of living of the Ceylonese is high by oriental standards but low by western standards. There is a diversity of opinion as to why this is so. Most western observers would say it is due to the high population and low productivity. But as Mr. Oliver's book makes plain the inhabitants of Ceylon see it differently.

During the era of colonial control, the Ceylonese assigned their economic woes to foreign misrule. Independence came, but foreigners continued to own the estates, make business decisions and enjoy the higher incomes, so Ceylonese leaders said ownership and control must be transferred to Ceylonese hands if the situation is to be remedied. With ownership and control partially shifted, the Ceylonese are discovering that tea, rubber and coconuts must be sold in distant markets at prices set by world supply and demand. Low prices in world markets have led to charges of foreign conspiracy and Western "economic" imperialism.

Mr. Oliver went to Ceylon to teach at the University of Ceylon for the aca-

demic year 1955–56. While there he studied government reports, legislative records, and the newspapers for the period 1916–1956, for the purpose of noting economic opinions, the events and factors responsible for these opinions and their impact on the island's history. This book is a report of his findings.

It is a real contribution in that it shows how the ideas of oriental leaders which often appear incomprehensible and invalid to western eyes, become logical and take on a semblance of validity when viewed against the local situation that gave rise to them. The book will not convince western economists of the validity of such ideas, but it will aid to understand the point of view of the leaders of southeast Asia. Having lived in Ceylon, the reviewer can vouch for the accuracy of Professor Oliver's interpretations.

University of Michigan WILFORD J. EITEMAN

NOTES

ANNOUNCEMENT

The twenty-eighth annual conference of the Southern Economic Association will be held on November 21 and 22, 1958, at the Atlanta Biltmore Hotel, Atlanta, Georgia.

DEATH

Russell Grady, associate professor of accounting at the University of Kentucky, died January 6, 1958.

APPOINTMENTS AND RESIGNATIONS

Clark Lee Allen has resigned as head of the Department of Economics at North Carolina State College to accept a position as professor of economics at Southern Illinois University.

A. Bruce Anthony has retired as professor of economics at Mercer University, and has been appointed professor emeritus of economics.

Owen D. Belcher has accepted an appointment as an assistant in agricultural economics at the Alabama Polytechnic Institute to engage in full-time research work in agricultural credit.

E. M. Bernstein has resigned as director of the Department of Research and Statistics, International Monetary Fund, to enter private business.

Robert C. Brooks, Jr., of the University of Georgia, has been awarded a Ford Foundation fellowship to permit him to complete his doctoral dissertation at the University of Chicago Business School. On February 1, 1959, he will join the faculty of Vanderbilt University as assistant professor of business administration.

C. M. Buck has resigned as associate professor of economics, Kentucky Weslyan College, to accept a similar position at Lawrence Institute of Technology, Detroit.

Katie Lou Byrd has been added to the Commerce Department staff at Morehead State College (Kentucky).

David C. Cole, of the University of Michigan, has accepted a position as assistant professor of economics and associate director of the Graduate Training Program in Economic Development at Vanderbilt University effective September 1, 1958.

Charles F. Concklin has been appointed associate professor of economics, Centre College (Kentucky).

Frank Coolsen, associate professor of marketing, University of Kentucky, is on leave for the year 1957–58 to study at the University of Illinois.

William H. Culp has resigned as assistant professor of business administration at Davidson College to complete work on his doctorate at the University of Michigan.

T. R. Davis has resigned from the Department of Business Administration, Bellarmine College (Kentucky).

Merrill De Voe was visiting professor of marketing at the University of Kentucky for the year 1957–58.

Edward C. Duggins has accepted a position in economics at Murry State College (Kentucky).

Corrine Elijah has accepted a position in economics at Kentucky Weslyan College.

M. Mason Gaffney has resigned as assistant professor of economics at North Carolina State College to accept a position as associate professor of economics at the University of Missouri.

Claude S. George, Jr., associate professor of industrial management in the School of Business Administration, University of North Carolina, has been appointed assistant dean of the School of Business Administration, as of September 1, 1958.

Oliver Guinn, of the University of Texas, has accepted an appointment as instructor in economics at West Texas State College.

Norvaline C. Hale has joined the staff in Business Administration, Eastern State College (Kentucky).

Rector R. Hardin has been appointed professor of management at the College of William and Mary in Norfolk.

H. Gordon Hayes, who retired from Ohio State University in 1952 to accept a position at Tulane University, has retired from the latter. He is professor emeritus of economics at both universities.

Tyler F. Haygood has been appointed professor of economics, School of Business, University of Louisville.

Warren W. Haynes, professor of economics, University of Kentucky, was in England during 1956–57 on a Ford Foundation fellowship.

Victor C. Heck, chairman of the Department of Economics at Mercer University, has been named as the first occupant of the newly established John D. Stetson Chair of Economics at that institution.

Betty C. Horn has accepted a position in Business Administration at Eastern State College (Kentucky).

James A. Hutchinson has been appointed an assistant in agricultural economics at the Alabama Polytechnic Institute and will be engaged in full-time research work in farm management and production economics.

John Johnson, assistant professor of economics at the University of Kentucky, has resigned to become professor of economics at Ferris Institute (Michigan).

Z. William Koby has been appointed instructor in marketing and advertising at the University of Houston.

Harold Q. Langenderfer, associate professor of accounting and since the fall of 1956 assistant dean of the School of Business Administration, University of North Carolina, has resigned from the assistant deanship. He will return to full-time teaching and research at the beginning of the 1958–1959 academic year.

Bill Lawton, head of the Department of Economics-Sociology at Western Kentucky State College, was on leave for the year 1957–58.

George H. Ligon has been added to the staff in Business Administration, Murray State College (Kentucky).

Joseph Logan Massie has returned to the University of Kentucky after three years on the staff of the School of Business, University of Chicago.

Frederic Meyers, associate professor of economics at the University of Texas, has accepted an appointment as professor of industrial relations in the College of Business Administration, University of California at Los Angeles.

Charles R. Minton has been appointed assistant professor of economics at the College of William and Mary in Norfolk.

William G. Modrow has been appointed assistant professor of economics at Texas A & M College.

Aurelius Morgner, of Texas A & M College, has been named visiting professor of economics at the Escola de Sociologia e Politica, University of Sao Paulo, Brazil, for the period from February through August, 1958.

William H. Nicholls became chairman of the Department of Economics and Business Administration, Vanderbilt University, on February 1, 1958.

John P. Owen, chairman of the Department of Economics and Finance, University of Houston, has been appointed director of Graduate Studies for the College of Business at that institution.

Fred Parker was appointed part-time instructor in business administration for the spring semester of the 1957–1958 academic year at the University of North Carolina.

William Nelson Parker, associate professor of economics at the University of North Carolina, has been designated as a recipient of a faculty research fellowship under the Ford Foundation Fellowship Program in Business Administration and Economics. The fellowship will cover the period June 1958 through May 1959, during which time he will be on leave-of-absence.

Jerome Peschke has been named associate dean of the College of Business, University of Houston.

James Potter, presently lecturer in economic history at the London School of Economics, has been appointed acting associate professor of economics at the University of North Carolina for the 1958–1959 academic year.

Thomas J. Reed has been appointed assistant professor of business administration at the College of William and Mary in Norfolk.

Robert M. St. Clair has been appointed associate professor of marketing at the College of William and Mary in Norfolk.

Henry Schuhman has been appointed chairman, Department of Business Administration, Bellarmine College (Kentucky).

Tom W. Scott has been appointed assistant professor of transportation in the College of Business, University of Houston.

Walter L. Slifer, formerly of Carson-Newman College, has been appointed professor of economics at Mercer University.

Corydon P. Spruill, professor of economics at the University of North Carolina, has been granted a leave of absence from February 1958 through January 1959 to undertake research work for the Special Commission on Public School Finance for the State of North Carolina.

George W. Stocking resigned as chairman of the Department of Economics and Business Administration, Vanderbilt University, February 1, 1958. He

will continue to be director of Vanderbilt's Institute of Research in the Social Sciences.

John R. Stockton, professor of business statistics and director of the Bureau of Business Research in the College of Business Administration, University of Texas, has been elected president of the Associated University Bureaus of Business and Economic Research.

Robert W. Strain, associate professor of insurance in the College of Business Administration, University of Texas, has been appointed by the governor of Texas as a member of the State Board of Insurance. He has been granted a leave of absence for the term of this appointment.

Robert Stroup is acting head of the Bureau of Business Research at the University of Kentucky.

Albert Teich, Jr., has been appointed assistant professor of business law at the College of William and Mary in Norfolk.

Ervin K. Zingler, professor of economics and finance at the University of Houston, is visiting professor of economics and finance in the School of Business at the University of Colorado during the present summer session.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

Norman Browsher, Federal Reserve Bank of St. Louis, St. Louis, Mo.
Otto A. Davis, University of Virginia, Charlottesville, Va.
George J. Malanos, Georgia State College of Business Administration, Atlanta, Ga.
S. G. Sanderson, Gulf Oil Corporation, Houston, Tex.
Harvey J. Wheeler, University of Virginia, Charlottesville, Va.
Frederic A. Brett, 56 The Highlands, Tuscaloosa, Ala.
Delbert C. Hastings, Federal Reserve Bank of St. Louis, St. Louis, Mo.
Charles M. Tiebout, Northwestern University, Evanston, Ill.
Mack A. Moore, 616 West Vanderbilt, Oak Ridge, Tenn.

BOOKS RECEIVED

Allen, Robert Loring. *Middle Eastern Economic Relations with the Soviet Union, Eastern Europe, and Mainland China.* Charlottesville, Va.: Woodrow Wilson Department of Foreign Affairs, University of Virginia, 1958. Pp. 5, 128. Paper, $1.00.

Bach, G. L. *Inflation: A Study in Economics, Ethics, and Politics.* Providence, R. I.: Brown University Press, 1958. Pp. v, 103. $2.50.

Blaug, Mark. *Ricardian Economics: A Historical Study.* New Haven, Conn.: Yale University Press, 1958. Pp. vii, 269. $5.00.

Boarman, Patrick M. *Der Christ und die Soziale Marktwirtschaft.* Stuttgart and Köln, Germany: W. Kohlhammer Verlag, 1955. Pp. 130.

Bolles, Blair. *The Big Change in Europe.* New York: Norton & Company, 1958. Pp. ix, 527. $5.95.

Boulding, Kenneth E. *The Skills of the Economist.* Cleveland, O.: Howard Allen, 1958. Pp. vi, 193. $3.50.

Buchanan, James M. *Public Principles of Public Debt: A Defense and Restatement.* Homewood, Ill.: Richard D. Irwin, 1958. Pp. v, 223. $5.00.

Buckingham, Walter S., Jr. *Theoretical Economic Systems: A Comparative Analysis.* New York: Ronald Press Company, 1958. Pp. v, 518. $7.00.

Calhoon, Richard P. and others. *Cases on Human Relations in Management.* New York: McGraw-Hill Book Company, 1958. Pp. v, 444. $6.00.

Canfield, Bertrand R. *Salesmanship: Practices and Problems.* 3rd ed. New York: McGraw-Hill Book Company, 1958. Pp. v, 573. $6.50.

Chacko, K. C. *The Monetary and Fiscal Policy of India.* Bombay, India: Vora & Company, 1957. Pp. vi, 386. $4.50.

Chamberlin, Edward H. *The Economic Analysis of Labor Union Power.* Washington, D. C.: American Enterprise Association, 1958. Pp. iv, 48. Paper, $1.00.

Chamberlin, Edward H. and others. *Labor Unions and Public Policy.* Washington, D. C.: American Enterprise Association, 1958. Pp. ix, 177. $4.50.

Cochrane, Willard W. *Farm Prices: Myth and Reality.* Minneapolis, Minn.: University of Minnesota Press, 1958. Pp. v, 189. $4.00.

Colm, Gerhard and Geiger, Theodore. *The Economy of the American People: Progress, Problems, Prospects.* Washington, D. C.: National Planning Association, 1958. Pp. iii, 167. Paper, $2.00.

Cornell, William B. and Madeheim, Huxley. *Organization and Management in Industry and Business.* 4th ed. New York: Ronald Press Company, 1958. Pp. iii, 579. $6.50.

Deane, Phyllis (ed.). *Bibliography on Income and Wealth.* Vol. VI. London: Bowes & Bowes, 1958. Pp. 139. $5.28.

Due, John F. *Sales Taxation.* Urbana, Ill.: University of Illinois Press, 1957. Pp. v, 396. $5.75.

Easton, Edison E. and Newton, Byron L. *Accounting and the Analysis of Financial Data.* New York: McGraw-Hill Book Company, 1958 Pp. v, 449. $7.00.

Fenn, Dan H., Jr. (ed.). *Management in a Rapidly Changing Economy.* New York: McGraw-Hill Book Company, 1958. Pp. v, 339. $5.00.

Fousek, Peter G. *Foreign Central Banking: The Instruments of Monetary Policy.* New York: Federal Reserve Bank of New York, 1957. Pp. 9, 116.

Frei, Rudolf (ed.). *Economic Systems of the West.* Vol. I. Tübingen, Germany: J. C. B. Mohr (Paul Siebeck), 1957. Pp. 247. DM. 22.

Friend, Irwin and others. *The Over-the-Counter Securities Markets.* New York: McGraw-Hill Book Company, 1958. Pp. v, 485. $12.50.

Furniss, Edgar S. *The Position of the Laborer in a System of Nationalism: A Study in the Labor Theories of the Later English Mercantilists.* New York: Kelley & Millman, 1957. Pp. 2, 260. $6.00.

Goldberg, Joseph P. *The Maritime Story: A Study in Labor-Management Relations.* Cambridge, Mass.: Harvard University Press, 1958. Pp. viii, 361. $6.50.

Gordon, Leland James. *The Function of the Consumer in a Free Choice Economy.* Westport, Conn.: Calvin K. Kazanjian Economics Foundation, 1957. Pp. 5, 51.

Gordon, Wendell C. *International Trade: Goods, People, and Ideas.* New York: Alfred A. Knopf, 1958. Pp. x, 647. $6.75.

Grayson, Henry and Lohman, Philipp H. *Principles of Economics.* New York: American Book Company, 1958. Pp. xviii, 709, xxxii. $7.00.

Gross, Feliks. *The Seizure of Political Power in a Century of Revolutions.* New York: Philosophical Library, 1958. Pp. vii, 398.

Harris, Abram L. *Economics and Social Reform.* New York: Harper & Brothers, 1958. Pp. v, 357. $5.00.

Holland, Daniel M. *The Income-Tax Burden on Stockholders.* Princeton, N. J.: Princeton University Press, 1958. Pp. xi, 241. $5.00.

Hudson, William J. and Constantin, James A. *Motor Transportation: Principles and Practices.* New York: Ronald Press Company, 1958. Pp. iii, 703. $7.50.

Jones, Richard. *An Essay on the Distribution of Wealth and on the Sources of Taxation.* New York: Kelley & Millman, 1956. Pp. ii, 329. $8.50.

Kennedy, William F. *Humanist Versus Economist: The Economic Thought of Samuel Taylor Coleridge.* Berkeley, Cal.: University of California Press, 1958. Pp. 96. Paper, $2.00.

Long, John. *Modern Russia.* New York: Philosophical Library, 1958. Pp. viii, 180. $6.00.

Matthews, George T. *The Royal General Farms in Eighteenth-Century France.* New York: Columbia University Press, 1958. Pp. viii, 318. $5.50.

Mikesell, Raymond F. *Agricultural Surpluses and Export Policy.* Washington, D. C.: American Enterprise Association, 1958. Pp. iv, 52. Paper, $1.00.

Moise, Ridgely. *Steady Work.* New Orleans, La.: Pelican Publishing Company, 1957. Pp. 67. Paper, $1.50.

National Bureau of Economic Research. *The National Economic Accounts of the United States: Review, Appraisal, and Recommendations.* New York: National Bureau of Economic Research, 1958. Pp. 202. Paper, 65¢.

Netschert, Bruce C. *The Future Supply of Oil and Gas: A Study of the Availability of Crude Oil, Natural Gas, and Natural Gas Liquids in the United States in the*

Period through 1975. Baltimore, Md.: Johns Hopkins Press, 1958. Pp. v, 134. $3.00.

New England Governors' Textile Committee. *New England Textiles and the New England Economy*. Cambridge, Mass.: Littauer Center, 1958. Pp. xii, I-47, II-89. Paper, $3.00.

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